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ENVIRONMENTAL

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19 June 1998

Subject: Addendum No. 4 to the Report of Field Activities:
Limited Surficial Paint Sludge Removal Program Ringwood Mines/Landfill Site, Ringwood, New Jersey.

Dear Jerry:

This summary report documents the activities conducted for the limited surficial paint sludge removal program in the southern section of the O'Connor Disposal Area at the Ringwood Mines/Landfill Site in Ringwood, New Jersey. The activities were conducted in response to the discovery of additional solidified surficial paint sludge at the site. The paint sludge was identified during a site visit on 8 April 1997 with U.S. Environmental Protection Agency (USEPA) representatives. The location of the additional paint sludge removal is shown on the attached survey map of the area, prepared by B.L. McGeoch, LS, PP.

This report is "Addendum No. 4 to the Report of Field Activities" and it documents the removal program work, performed from December 1997 through April 1998. The "Report of Field Activities," submitted to the USEPA in September 1988, and the "Addendum to the Report of Field Activities," submitted to the USEPA in February 1989, documented the original paint sludge removal program work, which was conducted in 1987 and 1988. "Addendum No. 2 to the Report of Field Activities," submitted to the USEPA in November

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1991, documented the additional paint sludge and drum removal activities, which were conducted in 1990 and 1991. "Addendum No. 3 to the Report of Field Activities", dated January 4, 1996 documented the limited removal of surficial paint sludge conducted in 1995.

Introduction

In response to the discovery of additional solidified surficial paint sludge in 1997, the USEPA requested that Ford Motor Company remove it from the site. Ford agreed to remove the paint sludge and, consistent with the earlier removal programs, selected The Environmental Quality Company of Belleville, Michigan (EQ) to manage the treatment and disposal of the paint sludge. EQ operates waste treatment, recovery, and disposal facilities in Michigan, and handled the disposal of the paint sludge from the earlier removal programs. All work was conducted in accordance with the *Final Work Plan for Remediation Services, Ringwood Mines/Landfill Site, Ringwood, New Jersey,* dated September 8, 1997, and the *Health and Safety Plan* dated December 1997, prepared by ARCADIS Geraghty & Miller.

what does this say

Summary Of Activities

The companies involved in performing the paint sludge removal program activities were as follows:

- ARCADIS Geraghty & Miller, Inc. of Mahwah, New Jersey was retained by Ford and was responsible for the planning, implementation, and oversight of the removal program. ARCADIS Geraghty & Miller's responsibilities included coordinating and

contracting for the excavation, loading, transportation, treatment, and disposal of the sludge, and grading and seeding of the excavated area.

- Integrated Technical Services, Inc. (ITS) of Parsippany & Winslow, New Jersey was responsible for the excavation, loading, and transportation of the paint sludge. ITS subcontracted Freehold Cartage, Inc. of Freehold, New Jersey for transportation services.

- Laboratory analysis of post-excavation soil samples and the groundwater seep sample for the December excavation work was performed by Quanterra of North Canton, Ohio.

- Laboratory analyses of post-excavation soil samples for the April excavation work was performed by Quanterra and Encotec of Ann Arbor, Michigan.

- EQ provided waste characterization, treatment, and disposal services.

- Ford Allen Park Clay Mine Landfill in Allen Park, Michigan provided final disposal services for the paint sludge treated by EQ.

- B. L. McGeoch, Inc. Land Surveyor & Professional Planner of Ringwood, New Jersey (McGeoch) surveyed the property to delineate the paint sludge removal area.

- Robert Wogisch Landscape Contracting Inc. of Ringwood, New Jersey performed the seeding of the property.

A chronological summary of the limited surficial paint sludge removal program activities that occurred from December 1997 through April 1998 is as follows:

- December 15 - 18, 1997: Representatives of the USEPA, CDM Federal (the USEPA oversight contractor), and ARCADIS Geraghty & Miller conducted a walk-through of the site to coordinate the administrative and technical logistics of the removal activities (i.e., decontamination area, staging of waste, etc.). The paint sludge appeared to extend between 25 and 40 feet from a groundwater seep in the center of the surficial paint sludge as shown on the area survey map. Following discussions with the USEPA and CDM representatives, sample collection locations were determined for post-excavation soil sampling.

  The paint sludge had been characterized as part of the removal effort conducted in 1995. That characterization, USEPA hazardous waste code D008 (lead), was acceptable for Waste Determination Certification by EQ. The D008 waste code was consistent with the original 1987 characterization. ITS was mobilized, began removal of the paint sludge, and staged the excavated material in on-site drums for transport to the EQ waste treatment/disposal facility at a later date. One groundwater seep sample (Seep-1), three post-excavation soil samples (PE-1, PE-2, PE-3), and a field blank were collected in the areas identified in consultation with the USEPA on-site representative and submitted to Quanterra for CLP Level 4 deliverables, SW-846 method 6010.

  Laboratory results are provided in Table 1. Arsenic and lead were not detected at concentrations greater than the NJDEP groundwater standards or restricted soil

criteria. Lead was detected in sample PE-3 at a concentration of 503 mg/kg which is greater than the unrestricted NJDEP soil criteria of 400 mg/kg. The laboratory data validation report is provided in Appendix A.

After the removal of surficial paint sludge, the USEPA, ARCADIS Geraghty & Miller, and CDM representatives performed a site inspection. Three localized areas were identified by the USEPA: [1] sludge chips in surface soil in the vicinity of one of the sludge removal areas (near the seep), [2] an area of sludge that could not be removed without creating a greater disturbed area associated with chipping away the spreading sludge (mostly buried), and [3] mounds that may have underlying sludge. Consensus was reached that the objective of this removal phase had been met. Final drum count: six 110-gallon drums, two 85-gallon drums, and fourteen 55-gallon drums. A total of 22 drums were staged on-site and covered with a plastic tarp.

- January 8 - 12, 1998: USEPA, ARCADIS Geraghty & Miller, CDM, and ITS personnel returned to the site to remove additional surficial paint sludge and address open issues identified on December 18, 1997. An additional area of sludge, approximately 50' x 50', was identified. Consensus was reached that this remaining material on and near the slope (near PE-3) would not be removed immediately, as excavation appeared impractical and a greater potential exposure risk might result if the material were disturbed.

Five roll-off containers were filled with excavated paint sludge, impacted soil and surface paint chips. Eight empty 55-gallon water drums that had been used to temporarily contain well-development water from wells OB-16, OB-17, and OB-18 were crushed and placed in one of the roll-off containers. Well development water from the drums was previously analyzed for target compound list (TCL) volatile organic compounds (VOCs) and target analyte list (TAL) inorganic constituents (metals and arsenic), and was deemed to be within acceptable risk limits established by the USEPA and the State of New Jersey. Evidence of bullet holes in the drums staged in the monitoring well areas accounted for the drums being empty of water.

Excavation was terminated on January 9, 1998. The exposed sludge face was covered with soil so that no sludge was visible. Vegetative debris from site clearing was placed in the excavated area which was in turn covered with plastic sheeting. Thirty bales of straw were placed down-slope of the site area to mitigate potential sediment run-off.

The five roll-off containers were staged on the gravel drive near Peters Mine Road. The 22 remaining drums of sludge were staged adjacent to the gravel drive on plastic sheeting and covered with a tarp. The roll-off containers and drums were subsequently picked up and transported to the EQ facility for treatment and disposal of the paint sludge. Uniform waste manifests from The Michigan Department of Natural Resources for the drums and containers are provided in Appendix B. The USEPA met with representatives of a community group and a Borough of Ringwood health official to conduct a site inspection and review the work that had been completed.

- April 27-29, 1998 : USEPA, ARCADIS Geraghty & Miller, CDM, and ITS personnel returned to the site to complete the paint sludge removal project. This

additional work was undertaken after consensus by the on-site representatives that the excavation required involved approximately 20 cubic yards of material on and near the slope (near PE-3) identified in January 1998 (Refer to Figure 1).

Four post-excavation soil samples (S-1A, S-1B, S-2, and S-3), a trip blank, and field blank were collected from the excavation below the areas of paint sludge, and were submitted to Encotec for analysis. These soil sampling locations were determined in advance by the on-site representatives to delineate the impacted soil limits, and were collected 0-6 inches below the excavation surface. While removing rocks for the sampling of point S-2, an area of approximately one cubic yard of sludge was discovered and removed. Soil samples S-1A, S-1B, S-2, and S-3 were submitted for analysis of lead and arsenic (SW 846 Method 6010), and samples S-1A and S-1B were also for analyzed for CLP TCL Volatile Organics (OLM 03.2). Laboratory results are provided in Table 1. The laboratory data validation report may be found in Appendix A.

ITS performed the soil/paint sludge removal and transfer to one thirty yard tractor trailer. All areas of excavation were regraded, covered with clean fill in accordance with the specifications as stated in the *Contract Documents for the Paint Sludge Removal Action, Ringwood Mines/Landfill Site, Ringwood, New Jersey,* prepared by Woodward-Clyde Consultants, August 1987 and were seeded for erosion control by Robert Wogisch Landscape Contracting. Surface paint sludge chips were also collected by hand and removed from the site. As in the removal conducted in December 1997 and January 1998, existing waste characterization was acceptable for Waste Determination Certification required by EQ. The USEPA hazardous waste code D008 (lead) was consistent with the original characterization. The paint sludge

was transported to the EQ facility for treatment and disposal. The truck manifests for this shipment and for the imported fill are provided in Appendix B.

If you have any questions or require additional information please call.

Sincerely,

ARCADIS Geraghty & Miller, Inc.

C.J. Motta/ASV

Christopher J. Motta
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US Environmental Protection Agency
Region II
Organic Data Validation
Standard Operating Procedure
HW-6
Revision 11

June 1996

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

INTRODUCTION

Scope and Applicability

This SOP offers detailed guidance in evaluating laboratory data generated according to the methods in the "USEPA Contract Laboratory Program Statement of Work for Organics Analysis OLM03.2," August 1994. The validation methods and actions discussed in this document are based on the requirements set forth in the "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," February 1994. This document attempts to cover technical as well as contractual problems specific to each fraction and sample matrix; however, situations may arise where data limitations must be assessed based on the reviewer's professional judgement.

In addition to technical requirements, contractual requirements are also covered in this document. While it is important that instances of contract non-compliance be addressed in the Data Assessment, the technical criteria are always used to qualify the analytical data.

Summary of Method

To ensure a thorough evaluation of each result in a data case, the reviewer must complete the checklist within this SOP, answering specific questions while performing the prescribed "ACTIONS" in each section. Qualifiers (or flags) are applied to questionable or unusable results as instructed. The data qualifiers discussed in this document are defined on page 4 of the National Functional Guidelines mentioned above.

The reviewer must prepare a detailed data assessment to be submitted along with the completed SOP checklist. The Data Assessment must list all data qualifications, reasons for qualifications, instances of missing data and contract non-compliance. This information is further summarized on the Organic Regional Data Assessment Summary and Data Rejection Summary forms (see attached).

Reviewer Qualifications

This SOP is intended for use by organic data validators who have successfully completed the USEPA Region II data validation training program. Data reviewers must possess a working knowledge of the USEPA Statement of Work and National Functional Guidelines mentioned above.

DEFINITIONS

Acronyms

BFB - bromofluorobenzene
BHC - benzene hexachloride
BNA - base neutral acid
CCS - contract compliance screening
CLASS - Contract Laboratory Analytical Services Support
CLP - Contract Laboratory Program
CRQL - Contract Required Quantitation Limit
%D - percent difference
DCB -decachlorobiphenyl
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenylethane
DDT - dichlorodiphenyltrichloroethane
GC - gas chromatography
GC/EC - gas chromatograph/electron capture detector
GC/MS - gas chromatograph/mass spectrometer
GPC - gel permeation chromatography
IS - internal standard
kg - kilogram
mg - microgram
MAGIC - Mainframe Access Graphical Interface with CARD
MS - matrix spike
MSD - matrix spike duplicate
l - liter
ml - mililiter
PCB - polychlorinated biphenyl
PE - performance evaluation
PEM - Performance Evaluation Mixture
QC - quality control
RAS - Routine Analytical Services
RIC - reconstructed ion chromatogram
RPD - relative percent difference
RRF - relative response factor

$\overline{RRF}$ - average relative response factor (from initial calibration)
RRT - relative retention time
RSD - relative standard deviation
RT - retention time
RSCC - Regional Sample Control Center
SDG - sample delivery group
SMC - system monitoring compound
SOP - standard operating procedure
SOW - Statement of Work
SVOA - semivolatile organic analysis
TCL - Target Compound List
TCLP - Toxicity Characteristics Leachate Procedure
TCX -tetrachloro-m-xylene
TIC - tentatively identified compound

Acronyms (cont'd.)

TPO - technical project officer
VOA - volatile organic analysis
VTSR - validated time of sample receipt

Data Qualifiers

U	-	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	-	The analyte was positively dienrified; the associated numerical value is the approximate concentration of the analyte in the sample.
N	-	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."
NJ	-	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	-	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	-	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: _____ **LABORATORY:** _____

SITE NAME: _____ **SDG Number(s):** _____

1.0 Chain of Custody and Sampling Trip Reports

1.1	Are the Traffic Reports/Chain-of-Custody Records present for all samples?	[X]	_	_
	ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.			
1.2	Is the Sampling Trip Report present for all samples and all fractions?	[]	_	X
	ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.			

2.0 Data Completeness and Deliverables

2.1	Have any missing deliverables been received and added to the data package?	X	_	[]
	NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)			
	ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.			
2.2	Was CLASS CCS checklist included with package?	_	_	X
2.3	Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags?	_	[]	X
	ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			

3.0 Cover Letter SDG Narrative

3.1	Is the Narrative or Cover Letter Present?	X[]	_	_
3.2	Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	X[]	_	_
3.3	Does the narrative contain the following information:			
	VOA: description of trap and columns used during sample analyses?	[X]	_	_
	BNA: description of columns used during sample analyses?	[]	_	X

		YES	NO	N/A
	Pest: description of columns used during sample analyses?			
NOTE:	As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4	Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[]	_	X
3.5	Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	[]	X	_
3.6	Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?	[]	X	_
3.7	Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	[]	_	X

ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available, document in the Data Assessment under Contract Problems/Non-Compliance section.

4.0 Data Validation Checklist

4.1	Check the package for the following discrepancies:			
	a. Is the package paginated in ascending order starting from the SDG narrative?	[X]	_	_
	b. Are all forms and copies legible?	X[]	_	_
	c. Is each fraction assembled in the order set forth in the SOW?	[X]	_	_
	d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[X]	_	_
	The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.			
	Does this package contain:			
	VOA Data?	X	_	
	BNA Data?	_	X	
	Pesticide/PCB data?	_	X	

ACTION: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? _ [X] _

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? _ [X] _

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or not samples were preserved. The holding time for soils is 10 days from date of collection.

YES NO N/A

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded, document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

		YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)				
3.1	Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
	a. Low Water?	[X]	_	_
	b. Low Soil?	[]	_	X_
	c. Med Soil?	[]	_	X_
3.2	Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
	a. Low Water?	[X]	_	_
	b. Low Soil?	[]	_	X_
	c. Med Soil?	[]	_	X_

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3	Were outliers marked correctly with an asterisk?	[]	_	X
ACTION: Circle all outliers with red pencil.				
3.4	Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?	_	[X]	_
	If yes, were samples re-analyzed?	[]	_	X
	Were method blanks re-analyzed?	[]	_	X

ACTION: If recoveries are ³ 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

YES NO N/A

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? _ [X] _

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? [X] _ _

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:

a. Low Water? [X] _ _

b. Low Soil? [] _ X_

c. Med Soil? [] _ X

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of 10	___ out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 5	___ out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed

		YES	NO	N/A
	professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.			
	ACTION: Circle all outliers with red pencil.			
5.0 Blanks (Form IV)				
5.1	Is the Method Blank Summary (Form IV) present?	[X]	_	_
5.2	Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	[X]	_	_
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	[X]	_	_
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?	[X]	_	_
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?	[]	X	_
	ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data. If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly. If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.			
5.6	The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.			
	Was the correct identification scheme used for all VOA blanks?	[X]	_	_
	ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.			
5.7	Chromatography: review the blank raw data- chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[X]	_	_
	ACTION: Use professional judgement to determine the effect on the data.			

		YES	NO	N/A
5.8	Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte?	[X]	_	_

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1	Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs?	_	[X]	_

NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2	Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)?	X	[]	_

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

		YES	NO	N/A
	ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.			
7.4	Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[X]	_	_
	NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.			
	ACTION: If mass assignment is in error, qualify all associated data as unusable "R".			
7.5	Have the ion abundance criteria been met for each instrument used?	[X]	_	_
	ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).			
	ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.			
7.6	Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)	_	[X]	_
7.7	Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[X]	_	_
	ACTION: If large errors exist, take action as specified in section 3.5 above.			
7.8	Are the spectra of the mass calibration compound acceptable?	[X]	_	_
	ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			

8.0 Target Compound List (TCL) Analytes (FORM I VOA)

8.1	Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
	a. Samples and/or fractions as appropriate?	[X]	_	_
	b. Matrix spikes and matrix spike duplicates?	[X]	_	_
	c. Blanks?	[X]	_	_
8.2	Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
	a. Samples and/or fractions as appropriate?	[X]	_	_
	b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]	_	_

		YES	NO	N/A
	c. Blanks?	[] X	_	_
ACTION: If any data are missing, take action specified in 3.2 above.				
8.3	Are the response factors shown in the quant. report?	[]	X	_
8.4	Is chromatographic performance acceptable with respect to:			
	a. Baseline stability?	[X]	_	_
	b. Resolution?	[X]	_	_
	c. Peak shape?	[X]	_	_
	d. Full-scale graph (attenuation)?	[X]	_	_
	e. Other: _____?	[]	_	X
ACTION: Use professional judgement to determine the acceptability of the data.				
8.5	Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[X]	_	_
ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.				
8.6	Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	_	_
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[X]	_	_
8.8	Do sample and standard relative ion intensities agree within ±20%?	[X]	_	_
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.				
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.				

9.0 Tentatively Identified Compounds (TIC)

9.1	Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[X]	_	_

		YES	NO	N/A
9.2	Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
	a. Samples and/or fractions as appropriate?	[ ]X	_	_
	b. Blanks?	[X]	_	_
	c. Alkanes listed for each sample?	[ ]	_	X_

ACTION: If any TIC data are missing, take action specified in 3.2 above.

ACTION: Add "JN" qualifier to all chemically named TICs, if missing.

9.3	Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2-dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)			
	ACTION: Flag with "R" any TCL compound listed as a TIC.	_	[X]	_
9.4	Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?			
9.5	Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]	X	_

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

9.6	Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?			
	ACTION: If yes, cross out questionable TIC(s).	___	[X]	_

10.0 Compound Quantitation and Reported Detection Limits

10.1	Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)	_	[X]	_
10.2	Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	[X]	_	

ACTION: If errors are large, take action as specified in section 3.5 above.

YES NO N/A

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.

11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration? [X] _ _

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)? [X] _ _

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Were all low level soil standards, blanks and samples analyzed by heated purge? [X] _ _

ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".

12.3 Are the % relative standard deviation (%RSD) values for VOAs £ 30% over the concentration range of the calibration? [X] _ _

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria.

12.4 Are any average RRFs < 0.05? _ [X] _

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail

YES NO N/A

contractual %RSD or RRF criteria, provided the %RSD is < 40% and RRF is > 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) _ [X] _

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples? _ [X] _

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? [] _ X

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria? _ [] X

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

YES NO N/A

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

13.4 Are any continuing calibration RRFs < 0.05? _ [] X

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is £ 40% and the RRF is ³ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.) _ [] X

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration? [X] _ _

If no, was the sample re-analyzed? [X] _ _

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

Sample #	Internal Std.	Area	Lower/Upper Limit
____	_____	____	____/____
____	_____	____	____/____
____	_____	____	____/____
____	_____	____	____/____

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

- -

YES NO N/A

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop-off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [X] _ _

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? [] X_ _

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? _ [] X

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? _ [] X

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

ACTION: If technical holding times were exceeded, flag all positive results as estimated (J) and sample quantitation limits as estimated (UJ), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on sample results. At a minimum, all results should be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times were exceeded by more than 28 days, all non-detect data must be qualified "R", unusable.

YES NO N/A

NOTE: Contractual Holding Times: Extraction of water samples must be started within 5 days VTSR. Soil/sediment samples must be extracted within 10 days of VTSR. This requirement does not apply to Performance Evaluation (PE) samples. Water and soil/sediment extracts must be analyzed within 40 days following extraction.

ACTION: If contractual holding times are exceeded, document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

3.0 Surrogate Recovery (Form II)

3.1	Are BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
	a. Low Water?	[]	_	X
	b. Low Soil?	[]	_	X
	c. Med Soil?			
3.2	Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:	[]	_	X
	a. Low Water?			
	b. Low Soil?			
	c. Med Soil?	[]	_	X
ACTION:	Contact the lab for an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.	[]	_	X_
3.3	Were outliers marked correctly with an asterisk?	[]	_	X
ACTION:	Circle all outliers with red pencil.			
3.4	Were two or more base-neutral OR acid surrogate recoveries out of specification for any sample or method blank?			
	If yes, were samples reanalyzed?			
	Were method blanks reanalyzed?			
ACTION:	If all BNA surrogate recoveries are ³ 10%, but two within the base-neutral or acid fraction do not meet SOW specifications, for the affected fraction only (i.e. acid or base-neutral compounds):	_	[]	X_
	1. Flag all positive results as estimated (J).	[]	_	X_

YES NO N/A

2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.

3. Do not qualify non-detects if recoveries are greater than the upper acceptance limit.

If any base-neutral or acid surrogate has a recovery of < 10%:

1. Qualify positive results for that fraction as estimated (J).

2. Qualify non-detects for that fraction as unusable (R).

Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any surrogate fails acceptance criteria, the sample must be re-analyzed. If sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: The laboratory must submit the following data:

1. If surrogate recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If surrogate recoveries and/or internal standard responses fail to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

3.5 Are there any transcription/calculation errors between raw data and Form II?

ACTION: If large errors exist, contact the lab for an explanation or resubmittal of corrected deliverables. Make necessary corrections and note errors in the Data Assessment.

4.0 Matrix Spikes (Form III)

4.1	Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	_	[]	X
4.2	Were matrix spikes analyzed at the required frequency for each of the following matrices:			
	a. Low Water?	[]	_	X_
	b. Low Soil?			
	c. Med Soil?	[]	_	X_

YES NO N/A

[

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
___ out of 22	___ out of 22

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
___ out of 11	___ out of 11

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria and determine the need for some qualification of the data.

ACTION: Circle all outliers with red pencil.

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present? [] _ X_

5.2 Frequency of Analysis: Has a reagent/method blank analysis been reported per 20 samples of similar matrix, or concentration level, and for each extraction batch? [] _ X_

5.3 Has a BNA method blank been analyzed for each GC/MS system used? (See SOW pg. D-54/SVOA, Section 12.1.2.) [] _ X_

ACTION: If any method blank data are missing, contact the lab to obtain an explanation/resubmittal. If resubmittals are unavailable, use professional judgement to determine if the associated sample data should be qualified.

5.4 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, sec. 3.3.7.3 of the SOW for further information.

Was the correct identification scheme used for all BNA blanks? [] _ X_

YES NO N/A

ACTION: Contact the lab to obtain resubmittals, or make the required corrections on the forms. Document all corrections made by the validator in the Data Assessment under Contract Problems/Non-Compliance.

5.5 Chromatography: review the blank raw data - chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) acceptable for each instrument? [] _ X_

ACTION: Use professional judgement to determine the effect on the data.

5.6 Are all detected hits for target compounds less than the CRQL for that analyte in all method blanks?

Exception: Phthalate esters must be less than five times (5') the CRQL. [] _ X_

6.0 Contamination

NOTE: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/reagent blanks have positive results (TCL and/or TIC)? _ [] X_

NOTE: Water: When applied as directed in the table below (page 29), the contaminant concentration in method/ instrument/reagent blanks is multiplied by the sample dilution factor, where necessary.

Soil: If the lab has not already done so, the contaminant concentration in soil blanks is multiplied by 33 times the sample dilution factor and corrected for %moisture (fraction of solid) where necessary. 30 grams of sodium sulfate (1 gram for medium level soils) are used to prepare the soil reagent/method blank as instructed on page D-54/SVOA, section 12.1.3. Contact the lab to obtain resubmittals if the soil blanks are not reported in soil units (mg/kg).

6.2 Do any field/rinse blanks have positive BNA results (TCL and/or TIC)?

ACTION: Prepare a list of samples associated with each contaminated blank. (Attach a separate sheet.) _ [] _X

NOTE: All field blank results associated to a particular group of samples (may exceed one per case) must be used to qualify sample data. Do not convert field blank results to account for the difference in soil CRQLs. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, spectral, instrument performance or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If gross contamination exists, all data

YES NO N/A

in the associated samples should be qualified as unusable "R".

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Common Phthalate-Esters	Sample conc. is > CRQL, but £ 10′ blank value.	Sample conc. is < CRQL and £ 10′ blank value.	Sample conc. is > CRQL and > 10′
Other Contaminants	Sample conc. is > CRQL, but £ 5′ blank value.	Sample conc. is < CRQL and £ 5′ blank value.	Sample conc. is > CRQL and > 5′

NOTE: Analytes qualified "U" for blank contamination are still treated as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [] _ X_

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For analytes with high concentration, use professional judgement on qualification of these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Decafluorotriphenylphosphine (DFTPP)? [] _ X_

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift? [] _ X_

7.3 Has an instrument performance check solution been analyzed for every twelve hours of sample analysis per instrument? [] _ X

ACTION: List date, time, instrument ID, and sample number for which no associated GC/MS tuning data are valid. [] _ X

YES NO N/A

SAMPLE NUMBERS	DATE	TIME	INSTRUMENT ID
_____	___	___	_____
_____	___	___	_____
_____	___	___	_____
_____	___	___	_____

ACTION: If the lab cannot provide the missing data, reject "R" all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 198 (see SOW, page D-61/SVOA)? [] _ X_

NOTE: All ion abundance ratios must be normalized to m/z 198, the nominal base peak, even though the ion abundance of m/z 442 may up to 110% that of m/z 198.

ACTION: If mass assignment is in error, flag all associated sample data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used? [] _ X

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)

7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column? _ [] X

ACTION: If large errors exist, take action as specified in section 3.5 above. [] _ X

7.8 Are the spectra of the mass calibration compound acceptable?

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected. [] _ X

8.0 Target Compound List (TCL) Analytes (FORM I SV)

8.1 Are the Organic Analysis Data Sheets (Form I SV) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? [] _ X

b. Matrix spikes and matrix spike duplicates? [] _ X

		YES	NO	N/A
	c. Blanks?	[]	_	X
8.2	Has GPC cleanup been performed on all soil/ sediment sample extracts?	[]	_	X
ACTION:	If data suggests that GPC was not performed, use professional judgement. Make note in Contract Problems/Non-Compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.			
8.3	Are the BNA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
	a. Samples and/or fractions as appropriate?	[]	_	X
	b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[]	_	X
	c. Blanks?	[]	_	X
ACTION:	If any data are missing, take action specified in 3.2 above.			
8.4	Are the response factors shown in the quant. report?	[]	_	X
8.5	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[]	_	X
	Resolution?	[]	_	X
	Peak shape?	[]	_	X
	Full-scale graph (attenuation)?	[]	_	X
	Other:_____?	[]	_	X
ACTION:	Use professional judgement to determine the acceptability of the data.			
8.6	Are lab-generated standard mass spectra of identified BNA compounds present for each sample?			
ACTION:	If any mass spectra are missing, take action specified in 3.2 above. Note under	[]	_	X

		YES	NO	N/A
	Contract Non-compliance if lab does not generate their own standard spectra. If spectra are missing, reject all positive data.			
8.7	Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[]	_	X_
8.8	Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[]	_	X_
8.9	Do sample and standard relative ion intensities agree within ±20%?	[]	_	X_
	ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.7, 8.8, and 8.9.			
	ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.			

9.0 Tentatively Identified Compounds (TIC)

9.1	Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[]	_	X_
9.2	Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
	a. Samples and/or fractions as appropriate?	[]	_	X_
	b. Blanks?	[]	_	X
	c. Alkanes listed for each sample?	[]	_	X
	ACTION: If any TIC data are missing, take action specified in 3.2 above.			
	ACTION: Add "N" qualifier to all chemically named TICs, if missing.			
9.3	Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2-dimethylbenzene is xylene - a VOA TCL - and should not be reported as a TIC.)	_	[]	X
	ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4	Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[]	_	X
9.5	Do TIC and "best match" standard relative ion intensities agree within ±20%?	[]	_	X
	ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was made, change the identification to "unknown," or to some less specific identification (example: "C3 substituted			

		YES	NO	N/A
	benzene") as appropriate. Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable, "R".			
9.6	Are any TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?	_	[]	X_
	ACTION: If yes, cross out questionable TIC(s).			

10.0 Compound Quantitation and Reported Detection Limits

10.1	Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result.)	_	[]	X
10.2	Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	[]	_	X_
	ACTION: If errors are large, take action as specified in section 3.5 above.			
	ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is that should not be used, including any in the summary package.			

11.0 Standards Data (GC/MS)

11.1	Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for initial and continuing calibration?			
	ACTION: If any calibration standard data are missing, take action specified in 3.2 above.	[]	_	X

12.0 GC/MS Initial Calibration (Form VI)

12.1	Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction?	[]	_	X_
	ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2	Are the % relative standard deviation (%RSD) values for BNAs £ 30% over the concentration range of the calibration?	[]	_	X_
	ACTION: Circle all outliers with red pencil.			

YES NO N/A

NOTE: Although 21 BNA compounds have a contractual minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

NOTE: Eight BNA compounds do not require a 20ng standard. Refer to SOW section 7.2.4.5.1, page D-15/SVOA for a list of required compounds and contractual criteria.

ACTION: If the %RSD is > 30.0%, qualify positive results for that analyte "J" and non-detects using professional judgement. When %RSD is > 90%, flag all non-detect results for that analyte "R" (unusable) and all positive results "J" (estimated).

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

12.3 Are any average RRFs < 0.05? [ ] _ X

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05 then:

1. "R" all non-detects.

2. "J" all positive results.

12.4 Are there any transcription/calculation errors in the reporting of RRFs and/or %RSDs? (Check at least two values; if errors are found check more.) _ [ ] X_

ACTION: Circle errors with red pencil.

ACTION: If errors are large, take action as specified in section 3.5 above.

NOTE:Contract Requirement: The SOW allows up to four of the required analytes to fail contractual %RSD or RRF criteria provided the %RSD is £ 40% or RRF is ³ 0.010. (See Table 5, page D-66/SVOA and analytes marked with a "*" on Form VI for a list of required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION:If more than four analytes fail %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

13.0 GC/MS Continuing Calibration (Form VII)

13.1Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction? [ ] _ X

13.2Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?

ACTION:List below all sample analyses that were not analyzed within twelve hours of a continuing calibration standard for each instrument used. [ ] _ X

YES NO N/A

ACTION:If any forms are missing, or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to obtain an explanation/resubmittal. If continuing calibration data are unavailable, flag all associated sample data as unusable "R".

13.3Does any BNA compound have a percent difference (%D) between the initial and continuing calibration RRFs which exceeds the ±25.0% criteria? _ [] X_

ACTION:Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated "J". When %D is > 90%, reject all non-detects for that analyte, "R", and qualify positive results "J" (estimated).

13.4 Are any continuing RRFs < 0.05? _ [] X_

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify as unusable (R) associated non-detects and "J" associated positive values.

NOTE: Contract Requirement: The SOW allows up to four of the required analytes to fail contractual %D and RRF criteria, provided that the %D is £ 40% and the RRF is ³ 0.010. (See Table 5 page D-66/SVOA or analytes marked with a "*" on Form VI for a list of the required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than four analytes failed %D and RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Summary Form.

13.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %difference (%D) between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.) _ [] X_

ACTION: Circle errors with red pencil.

ACTION: If errors are large, take action as specified in section 3.5 above.

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?

If no, was sample re-analyzed? [] _ X

YES NO N/A

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

ACTION: If sample was not reanalyzed, document in Data Assessment in Contract Problems/Non-Compliance.

Sample #	Internal Std.	Area	Lower/Upper Limit
____	_____	____	____/____
____	_____	____	____/____
____	_____	____	____/____
____	_____	____	____/____

(Attach additional sheets if necessary.)
(or attach copies of Form VIIIs)

ACTION: 1. If the internal standard area count is outside the "upper" or "lower" limit, flag with "J" all positive results and non-detects quantitated with this internal standard.

2. Do not qualify non-detects associated with IS area > 100%.

3. If the IS area in the sample is < 50%, qualify all analytes associated with that IS estimated (J). If area counts are extremely low (< 25% of the area in the 12 hour standard), or if performance exhibits a major abrupt drop-off, flag all associated non-detects as unusable (R) and positive hits estimated (J).

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [ ] _ X

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 24 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

		YES	NO	N/A
15.1	Were any field duplicates submitted for BNA analysis?	[]	_	X

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

YES NO N/A

PART C: PESTICIDE/PCB ANALYSIS

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records or SDG Narrative indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data? _ [] X

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be qualified as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced, or if the ice was melted upon arrival at the laboratory, and the temperature of the cooler was elevated > 10^0 C, flag all positive results "J" and all non-detects "UJ".

ACTION: Check aqueous extraction log for sample pH, if adjustment was needed, it should have been noted in the SDG Narrative. If more information is needed, contact the lab.

2.0 Holding Times

2.1 Have any PEST/PCB technical holding times, determined from date of collection to date of extraction, been exceeded? _ [] X

NOTE: Technical Holding Times: Water and soil samples for PEST/PCB analysis must be extracted within 7 days of the date of collection. Extracts must be analyzed within 40 days of the date extraction.

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits "UJ" and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all the data should at least be qualified "J", but the reviewer may determine that non-detects are unusable "R".

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

YES NO N/A

NOTE: Contractual Holding Times: Extraction of water samples must be completed within 5 days VTSR. Soil/sediment samples must be extracted within 10 days of VTSR. This requirement does not apply to Performance Evaluation (PE) samples. Extracts of water and soil/sediment samples must be analyzed within 40 days following start of extraction.

ACTION: If contractual holding times are exceeded, document in the Data Assessment and Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

3.0 Surrogate Recovery (Form II)

3.1	Are the PEST/PCB Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
	a. Low Water?	[]	_	X_
	b. Soil?	[]	_	X
3.2	Are all the PEST/PCB samples listed on the appropriate Surrogate Recovery Summary for each of the following matrices:			
	a. Low Water?	[]	_	X
	b. Soil?	[]	_	X

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3	Were outliers marked correctly with an asterisk?	[]	_	X_
	ACTION: Circle all outliers with red pencil.			
3.4	Were surrogate recoveries of TCX or DCB outside of the contract specification for any sample, method blank or sulfur clean-up blank (30-150%)?	_	[]	X

ACTION: In the absence of matrix interference, qualification of the data is not required in the following three situations:

1. When surrogates on both columns are diluted out.

2. When one surrogate on one column was outside (either above or below) the contract limits but above 10%.

3. When the same surrogate on both columns is above the contract limit.

If the same surrogate on both columns is below the contract limit but above 10%, check

YES NO N/A

chromatograms for interference. The reviewer may use professional judgement, and qualify only those analytes which elute in the region of the GC chromatogram where interference was observed.

If the same surrogate on both columns is below the contract limit but above 10% (with no interference), qualify non-detects and positive hits "J" (estimated).

If recoveries for both surrogates on both columns are below the contract limit but above 10%, flag positive results and non-detects for that sample "J".
If recoveries are above the contract limit for both surrogates on both columns, then qualify positive values "J".

If both surrogates on one column are below the contract limit but above 10%, then use the data from the other column, providing both surrogates on that column are within contract limits. The validator must check from which column the concentration is reported for each analyte. If the value is reported from the failed column, then cross it out and use the value from the other column. Document this change in the Data Assessment.

If recovery is below 10% for either surrogate on any column, qualify positive results "J" and flag non-detects "R".

3.5 Were surrogate retention times (RT) within the windows established during the initial 3-point analysis of Individual Standard Mixture A (see Form VI Pest-1)? [] _ X

ACTION: If the RT limits are not met, positive results and non-detects for that sample may be qualified unusable, "R", based on professional judgement.

3.6 Are there any transcription/calculation errors between raw data and Form II? _ [] X_

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and document the effect in the Data Assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? [] _ X_

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices (one MS/MSD must be performed for every 20 samples of similar matrix or concentration level):

a. Low Water? [] _ X

b. Soil? [] _ X

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

ACTION: Circle all outliers with red pencil.

YES NO N/A

4.3 How many PEST/PCB spike recoveries are outside QC limits?

Water	Soil
___ out of 12	___ out of 12

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soil
___ out of 6	___ out of 6

ACTION:No action is taken on MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria and determine the need for some qualification of the data.

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present? [ ] _ X

5.2 Frequency of Analysis: Has a reagent/method blank been analyzed for each SDG, every 20 samples of similar matrix and concentration level or each extraction batch, whichever is more frequent? [ ] _ X

ACTION: If any blank data are missing, take action as specified above in section 3.2. If blank data is not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

5.3 A separate Form IV should be present if part of an extraction batch required sulfur removal. In such cases some samples will be listed on two blank summary forms - once under the method blank, and once under the sulfur clean-up blank (PCBLK). Was this additional blank raw data and Form IV submitted when required? [ ] _ X

ACTION: If sulfur clean-up blank data and Form IV are missing, take action as specified in 3.2 above.

5.4 Has a PEST/PCB instrument blank been analyzed at the beginning of every 12 hr. period following the initial calibration sequence (minimum contract requirement)? [ ] _ X

ACTION: If any blank data are missing, take action as specified in section 3.2 above.

5.5 Was the correct identification scheme used for all Pest/PCB blanks? (See page B-33, sec. 3.3.7.3 of the SOW for further information.) [ ] _ X

ACTION: Contact the lab to obtain resubmittals or make the required corrections on the forms.

YES NO N/A

Document in the Data Assessment under Contract Problems/Non-Compliance all corrections made by the validator.

5.6 Chromatography: review the blank raw data - chromatograms, quant. reports and data system printouts. Is the chromatographic performance (baseline stability) for each instrument acceptable? [] _ X_

ACTION:Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE:"Water blanks", "distilled water blanks" and "drilling water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/reagent, instrument, or cleanup blanks show positive hits for pest/PCBs? _ [] X_

6.2 If any method blanks and/or sulfur clean-up blanks contain "hits" for target compounds, are these hits greater than the CRQL for that analyte? _ [] X

6.3 In any instrument blanks, is the concentration of any target hit > 0.5 times CRQL for that analyte (see SOW, section 12.1.4.4.2, page D-77/PEST)? _ [] X

NOTE: Most labs will report 0.5 times CRQLs on the instrument blank Form I instead of the actual method CRQLs. If the lab reported the actual CRQLs, then check if any detected hits are above 0.5 times the CRQLs reported on the Form I.

ACTION: If yes to any of the above questions: note in the Data Assessment under Contract Problems/Non-Compliance if any method or clean-up blanks contain hits > the CRQL, or of instrument blank contained hits > 0.5 times CRQL for that analyte.

6.4 Do any field/rinse blanks have positive pest/PCB results? _ [] X

ACTION: Prepare a list of the samples associated with each contaminated blank. (Attach a separate sheet)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case or one per day) may be used to qualify data. Do not convert field blank results to account for the difference in soil CRQLs. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, and/or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

NOTE: When applied as directed in the table below, the contaminant concentration in method/instrument/ reagent/cleanup blanks is multiplied by the sample dilution factor, where necessary.

If the laboratory has not already done so, the contaminant concentration in soil blanks is multiplied by 33 times the sample dilution factor and corrected for %moisture (fraction of

YES NO N/A

solid) where necessary. 30 grams of sodium sulfate are used to prepare each soil reagent/method blank as instructed on page D-72/PEST, section 12.1.2.3.1. Contact the laboratory if the soil blanks are not reported in soil units (mg/kg).

Flag sample result with a "U":	**Report CRQL & qualify "U":**	**No qualification is needed:**
Sample conc. > CRQL, but £ 5′ blank.	Sample conc. < CRQL & is £ 5′ blank value.	Sample conc. > CRQL & > 5′ blank value.

NOTE: If gross blank contamination exists, all data in the associated samples should be qualified as "R", unusable.

6.5 Are there field/rinse/equipment blanks associated with every sample? ☐ _ X_

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For analytes with high concentrations, use professional judgement to qualify these values and document in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 Calibration and GC Performance

7.1 Are the following Gas Chromatograms and Data Systems Printouts for both columns present for all samples, blanks and MS/MSD:

a. Peak resolution check? ☐ _ X_

b. Performance evaluation mixtures? ☐ _ X

c. Aroclor 1016/1260? ☐ _ X

d. Aroclors 1221, 1232, 1242, 1248, 1254? ☐ _ X_

e. Toxaphene? ☐ _ X

f. Low points individual mixtures A & B? ☐ _ X

g. Med points individual mixtures A & B? ☐ _ X_

h. High points individual mixtures A & B? ☐ _ X

i. Instrument blanks? ☐ _ X

j. Were the appropriate GC columns used as specified on pg. D-11/PEST, sections 6.23.3.1 to 6.23.3.7, in the SOW? ☐ _ X_

		YES	NO	N/A
7.2	Do the chromatograms for all Individual Standard Mixtures and PEM analyses display single component analytes at > 10% but < 100% of full scale (see sections 9.3.5.8.1 thru 9.3.5.8.4, pages D-32 & 33/PEST)?	[ ]	_	X
	Have chromatograms for Individual Standard Mixtures and PEM analyses been replotted, showing scaling factor(s), to meet the above requirements when necessary?	[ ]	_	X

NOTE: All standard chromatograms must clearly display all peaks at > 10% but < 100% of full scale, and replotted if necessary to accommodate peaks not properly scaled in the initial chromatogram(s). Both the initial and replotted chromatograms must be submitted with the data package.

ACTION: If all single component peaks are not clearly displayed on chromatograms for all Individual Standard Mixtures and PEM analyses, contact the lab to obtain resubmittal of the necessary data.

7.3	Are Forms VI PEST 1-7 present and complete for each column and each analytical sequence?	[ ]	_	X

ACTION: If no, take action as specified in 3.2 above.

7.4	Are there any transcription/ calculation errors between raw data and Forms VI?	_	[ ]	X

ACTION: If large errors exist, take action as specified in section 3.6 above.

7.5	Do all standard retention times, including each pesticide in each level of Individual Mixtures A & B, fall within the windows established during the Initial Calibration (see Form VI PEST-1)?	[ ]	_	X

ACTION: If no, all samples in the entire analytical sequence are potentially affected. Check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised RT window, qualify all positive results "JN" and non-detects as unusable (R). For aroclors, the RT may be outside the window, but the aroclor may still be identified from its distinctive pattern.

7.6	Are the linearity criteria for the initial analyses of Individual Standards A & B within limits for both columns? (%RSD must be £ 25.0 for alpha and delta BHC, £ 30.0 for the two surrogates and £ 20% for all other analytes.)	[ ]	_	X

NOTE: Contractual requirements allow up to two single component TCL compounds, but not surrogates, on each column to exceed the criteria provided the %RSD is £ 30%. (See page D-28/Pest, sec. 9.2.5.7 in the SOW.) Technical criteria, however, are the same for all analytes.

ACTION: If technical criteria were not met, qualify all associated positive results generated during the entire analytical sequence "J" and all non-detects "UJ". When %RSD > 90%, flag all non-detect results for that analyte "R" (unusable).

		YES	NO	N/A
	ACTION: If more than two analytes failed %RSD, document in the Data Assessment Contract Problems/Non-Compliance section and Organic Regional Data Assessment Summary form.			
7.7	Is the resolution between each pair of adjacent peaks in the Resolution Check Mixture [3] 60.0% for both columns? (See Form VI PEST-4.)	[ ]	_	X
	ACTION: If no, qualify positive results for compounds that were not adequately resolved "J". Use professional judgement to determine if non-detects which elute in areas affected by co-eluting peaks should be qualified "N" as presumptive evidence of presence or unusable (R).			
7.8	Is Form VI PEST-5 present and complete for each Performance Evaluation Mixture (PEM) standard used for <u>both initial and continuing</u> calibrations (see SOW section 3.12.4.4, page B-52)?	[ ]	_	X
	ACTION: If no, take action as specified in section 3.2 above.			
7.9	For each PEM standard, was the resolution between each pair of adjacent peaks [3] 90.0% on both columns?	[ ]	_	X
	ACTION: Qualify positive results for compounds not adequately resolved estimated (J). Qualify non-detects based on professional judgement.			
7.10	Have Forms VI PEST-6 & PEST-7 been completed for all midpoint Individual Standards A and B used for initial calibration?	[ ]	_	X
	For each standard, was the resolution between each pair of adjacent peaks [3] 90.0% on both columns?	[ ]	_	X
	ACTION: If no, qualify positive results for compounds that were not adequately resolved estimated (J). Use professional judgement to determine if non-detects which elute in areas affected by co-eluting peaks should be qualified "N" as presumptive evidence of presence or unusable "R".			
7.11	Is Form VII Pest-1 present and complete for each PEM standard analyzed during the analytical sequence for both columns?	[ ]	_	X
	Was the %Breakdown of DDT and Endrin calculated using the equations given on page D-26/PEST, sec. 9.2.4.8 in the SOW?	[ ]	_	X
	Were all pesticides and surrogates in each PEM standard within the RT windows established during the Initial Calibration?	[ ]	_	X
	ACTION: If no, take action as specified in 3.2 above.			

		YES	NO	N/A
7.12	Has the individual percent breakdown for DDT/Endrin exceeded 20.0% in any PEM on either column? (See Form VII PEST-1.)			
	- for 4,4'-DDT?	_	[]	X
	- for Endrin?	_	[]	X
	Has the combined percent breakdown for DDT/Endrin exceeded 30.0% in any PEM on either column (required for all PEM analyses)?	_	[]	X

ACTION: 1. If any percent breakdown has failed the QC criteria in either PEM in steps 2 and 17 in the initial calibration sequence (page D-28/Pest, sec. 9.2.5.6 in the SOW), qualify all samples in the entire analytical sequence as described in sections 2.a, b and c below.

2. If any percent breakdown failed the QC criteria in a PEM calibration verification analysis, review data beginning with the samples which followed the last in-control standard until the next acceptable PEM and qualify the data as described below.

a. 4,4'-DDT Breakdown: If DDT breakdown was > 20.0%:

i. Qualify all positive results for DDT with "J". If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT unusable, "R".

ii. Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity "JN".

b. Endrin Breakdown: If endrin breakdown was > 20.0%:

i. Qualify all positive results for endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for Endrin as unusable "R".

ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity "JN".

c. Combined Breakdown: If the combined 4,4'-DDT and endrin breakdown is greater than 30.0%:

i. Qualify all positive results for DDT and Endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for endrin as unusable "R". If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT as unusable "R".

ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity "JN". Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity "JN".

7.13 Are all percent difference (%D) values for PEM analytes and surrogates on both

	YES	NO	N/A
columns ³ -25% and £ +25.0%? (See Form VII PEST-1.)	[]	_	X

ACTION: If no, qualify all associated positive results generated during the analytical sequence "J" and sample quantitation limits "UJ".

NOTE: If the failing PEM is part of the initial calibration, all samples are potentially affected. If the offending standard is a calibration verification, the associated samples are those which followed the last in-control standard until the next passing standard.

7.14 Is Form VII Pest-2 present and complete for each INDA and INDB calibration verification analyzed?	[]	_	X

ACTION: If no, take action specified in 3.2 above.

7.15 Are there any transcription/calculation errors between raw data and Form VII Pest-2?	_	[]	X

ACTION: If large errors exists, take action as specified in section 3.6 above.

7.16 Do all standard retention times for each INDA and INDB calibration verification fall within the RT windows established during the initial calibration sequence? (See Form VII PEST-2.)	[]	_	X

ACTION: If no, beginning with the samples which followed the last in-control standard, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised RT window, qualify all positive results and non-detects as unusable (R).

7.17 Are all %D values for INDA and INDB calibration verification compounds ³ -25.0% and £ +25.0%?	[]	_	X

ACTION: If the %D is outside the ±25.0% range for any compound(s), qualify associated positive results for that compound "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard containing the analyte(s) in question. If the %D is > 90%, flag all non-detects for that analyte "R" (unusable).

8.0 Analytical Sequence Check (Form VIII-PEST)

8.1 Is Form VIII present and complete for each column and each period of analyses?	[]	_	X

ACTION: If no, take action specified in 3.2 above.

8.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses, and all standards analyzed at the required frequency for each GC/EC instrument used.? (See SOW pages D-23 & D-58/PEST.)	[]	_	X

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify accordingly. Generally, the effect is negligible unless the sequence was grossly altered and/or the calibration was out of QC limits.

		YES	NO	N/A
8.3	Were all samples analyzed within a 12 hour time period beginning with the injection of an instrument blank and bracketed by acceptable analyses of the proper standards?	[]	_	X

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify accordingly. Document in the Data Assessment under Contract Problems/Non-Compliance and Organic Regional Data Assessment Summary.

8.4	If a multi-component analyte was detected in a sample, was a matching multi-component standard analyzed within 72 hours of the injection of the sample and within a valid 12 hour sequence?	[]	_	X

NOTE: This additional standard is for identification purposes only. Positive results for Aroclors and Toxaphene are quantitated from the initial calibration.

ACTION: If no, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

9.0 Cleanup Efficiency Verification (Form IX)

9.1	Is Form IX PEST-1 present and complete for each lot of Florisil Cartridges used? (Florisil Cleanup is required for all Pest/PCB extracts.)	[]	_	X
	Are all samples listed on the Pesticide Florisil Cartridge Check Form?	[]	_	X

ACTION: If no, take action specified in 3.2 above. If data suggests florisil clean-up was not performed, document in the Data Assessment under the Contract Non-compliance section.

9.2	Are percent recoveries (%REC) of the pesticide and surrogate compounds used to check the efficiency of the florisil clean-up procedure within QC limits of 80 - 120%?	[]	_	X

ACTION: Qualify only the analyte(s) which failed the recovery criteria as follows:

If %REC is < 80%, qualify positive results "J" and non-detects "UJ".

If any pesticide %REC was zero, flag non-detects "R" for that compound.

Use professional judgement to qualify positive results if any recoveries are > 120%.

NOTE: Sample data should be evaluated for potential interferences if recovery of 2,4,5-trichlorophenol was > 5% in the Florisil Cartridge Performance Check analysis. Document any problems found in the Data Assessment under the Contract Problems/Non-Compliance section.

9.3	If GPC Cleanup was performed (mandatory for all soil sample extracts), is Form IX Pest-2 present?	[]	_	X
	Are all soil samples listed on Form IX Pest-2?	[]	_	X

ACTION: If no, take action specified in 3.2 above. If data suggests GPC clean-up was not performed when required, document in the Data Assessment under the Contract Problems/Non-Compliance section and Organic Regional Data Assessment

	YES	NO	N/A
Summary.			
Are the %REC values for all pesticides in the GPC calibration solution between 80 - 110%?	[]	_	X
ACTION: Qualify only those analytes which failed the recovery criteria as follows: If %REC are < 80%, qualify positive results "J" and non-detects "UJ".			
If any pesticide %REC was zero, flag non-detects "R" for that compound.			
Use professional judgement to qualify positive results if any recoveries are > 110%.			
NOTE: An Aroclor mixture containing Aroclors 1016 and 1260 is also analyzed during GPC calibration; however, Aroclor data is not listed on Form IX PEST-2. The raw GPC data for Aroclors 1016/1260 must be evaluated for pattern similarity with previously analyzed Aroclor standards.			
9.4 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-35, sec. 3.3.7.8 and 3.3.7.9 of the SOW for further information.			
Was the correct identification scheme used for GPC and Florisil blanks?	[]	_	X

10.0 Pesticide/PCB Identification

10.1 Is Form X complete for every sample in which a pesticide or PCB was detected?	[]	_	X
ACTION: If no, take action specified in 3.2 above.			
10.2 Are all sample chromatograms properly scaled, attenuated, etc. as required for proper identification of single and multi-component analytes? (Refer to SOW sections 11.3.7.1 thru 11.3.7.8, page D-70/Pest for specific details.)	[]	_	X
NOTE: Proper verification of Pest/PCB results depends on clear, legible presentation of the raw data. Single component pesticides and all peaks chosen for quantitation of multi-component analytes must appear at less than full scale. Toxaphene and PCB patterns must be clearly visible to enable comparison with standard chromatograms.			
ACTION: If retention times or apex of peaks cannot be verified, or if multi-component peak patterns cannot be discerned, contact the lab to obtain rescaled chromatograms.			
10.3 Are there any transcription/calculation errors between raw data and Forms 10A and 10B?	_	[]	X
ACTION: If large errors exist, take action as specified in section 3.6 above.			
10.4 Are RTs of sample compounds within the established RT windows for analyses on both columns?	[]	_	X
Was GC/MS confirmation provided when required (when compound concentration is > 10 ug/ml in the final extract)?	[]	_	X

YES NO N/A

ACTION: Use professional judgement to qualify positive results which were not confirmed by GC/MS analysis. Qualify as unusable (R) all positive results which were not confirmed on a second GC column. Also qualify as unusable (R) all positive results which do not meet RT window criteria, unless associated standard compounds are similarly biased. Use professional judgement to assign an appropriate quantitation limit.

10.5 Is the percent difference (%D) calculated for the positive sample results on both columns > 25.0%? _ [] X

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

% Difference	Qualifier
0 - 25%	None
25 - 70%	"J"
70 - 100%	"JN"
> 100%	"R"
100 - 200% (Interference detected)*	"JN"
> 50% (Pesticide value is < CRQL)**	"U"

* When the reported %D is 100 - 200%, but interference is detected on either column, qualify the data with "J".

** When the **reported** pesticide value is lower than the CRQL, and the %D is > 50%, raise the value to the CRQL and qualify "U", undetected.

NOTE: For Aroclors, if the %D is > 50%, but the pattern of GC peaks on both columns indicates a specific Aroclor is present, qualify that Aroclor "J".

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the Data Assessment.

10.6 Check chromatograms for false negatives, especially the multiple-peak compounds (Toxaphene and the PCBs). Were there any false negatives? _ [] X

ACTION: Use professional judgement to decide if the compound should be reported. If the appropriate PCB standards were not analyzed within 72 hrs. of the sample(s) in question, qualify the data unusable "R".

Also note in Data Assessment under Contract Problems/Non-Compliance if the lab failed to analyze Aroclor standards when required.

11.0 Target Compound List (TCL) Analytes

11.1 Are the Organic Analysis Data Sheets (Form I Pest) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? [] _ X

b. Matrix spikes and matrix spike duplicates? [] _ X

		YES	NO	N/A
	c. Blanks?	[]	_	X
	d. Instrument Blanks (per column & analysis)?	[]	_	X
11.2	Are the Pest chromatograms and quant. reports included in the sample data package for each of the following:			
	a. Samples and/or fractions as appropriate?	[]	_	X
	b. Matrix spikes and matrix spike duplicates?	[]	_	X
	c. Blanks?	[]	_	X
	d. Instrument Blanks (per column & analysis)?	[]	_	X

ACTION: If any data are missing, take action specified in 3.2 above.

11.3	Are the calibration factors shown in the quant. reports?	[]	_	X
11.4	Is chromatographic performance acceptable with respect to:			
	a. Baseline stability?	[]	_	X
	b. Resolution?	[]	_	X
	c. Peak shape?	[]	_	X
	d. Full-scale graph attenuation?	[]	_	X
	e. Other: _____?	[]	_	X
11.5	Were any electropositive displacement (negative peaks) or unusual peaks seen?	_	[]	X

ACTION: Use professional judgement to determine the acceptability of the data. Address comments under System Performance section of the Data Assessment.

12.0 Compound Quantitation and Reported Detection Limits

12.1	Are there any transcription/calculation errors in Form I results? Check at least two positive results. Were any errors found?	_	[]	X

NOTE: Single-peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. Use professional judgement to decide whether a large discrepancy indicates the presence of an interfering compound. If an interfering compound is visible on the chromatogram, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity "JN". This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

		YES	NO	N/A
12.2	Are the CRQLs adjusted to reflect sample dilutions?	[]	_	X

ACTION: If large errors exist, take action as specified in section 3.6 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQLs from the diluted sample). Replace concentrations which exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with the result from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including those in the data summary package.

ACTION: Quantitation limits affected by large, off-scale peaks should be qualified as unusable (R). If the interference is on-scale, the reviewer may offer an approximated quantitation limit (UJ) for each affected compound.

NOTE: If a sample required greater than a 10 times dilution, then a 10 times more concentrated analysis must also be performed and submitted (see SOW, page D-60/PEST, section 10.2.3.5).

ACTION: If a more concentrated analysis is unavailable, document in the Contract Problems/Non-Compliance section of the Data Assessment. Use professional judgement to qualify non-detects and positive hits below the CRQL.

13.0 Field Duplicates

		YES	NO	N/A
13.1	Were any field duplicates submitted?	[]	_	X

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

ATTACHMENT 1

CLP Data Assessment

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

CASE No.: 11177 **SDG No.:** FNO-XQ-9 **LABORATORY:** Encotec
SITE: Ringwood

DATA ASSESSMENT

The current SOP No. HW-6 (Revision 11), June 1996 for CLP Organics Review and Preliminary Review has been applied.

All data were found to be valid and acceptable except those analytes which have been rejected, "R" (unusable). Due to various QC problems some analytes may have been qualified with a "J" (estimated), "N" (presumptive evidence for the presence of the material), "U" (non-detect), or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's Signature: _____ **Date:** 6/18/98

Verified By: _____ **Date:** ____

CLP DATA ASSESSMENT

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.

All samples were analyzed within the holding time requirements.

2. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

All surrogate recovery requirements were met.

CLP DATA ASSESSMENT

3. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data.

All percent recovery and RPD values met QC limits.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:

Contamination was not detected in the method blanks.

B) Field or rinse blank contamination:

Contamination was not detected in the field blank.

C) Trip blank contamination:

Acetone and methylene chloride were detected in the trip blank at concentrations of 19 ug/L and 3 ug/L, respectively. Acetone and methylene chloride were qualified as not detected in all smaples based on these trip blank results.

CLP DATA ASSESSMENT

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenyl-phosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".

Mass Spectometer tuning criteria were met.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ^{3} 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

One initial calibration was run. All response factors met QC requirements. The samples were analyzed within 12 hours of the initial calibration, therefore, no continuing calibration was required.

CLP DATA ASSESSMENT

7. CALIBRATION:

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 30% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R".

For the PEST/PCB fraction, if %RSD exceeds 20% for all analytes except for the two surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the sample shown were qualified for %RSD and %D:

All %RSD requirements were met.

8. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ±30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

Internal standards met QC requirements.

CLP DATA ASSESSMENT

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgement to determine either partial or total rejection of the data for that sample fraction.

9. COMPOUND IDENTIFICATION:

A) Volatile and Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

All compounds were identified correctly.

B) Pesticide Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract.

Not applicable.

CLP DATA ASSESSMENT

10. CONTRACT PROBLEMS NON-COMPLIANCE:

No contract problems were noted.

11. FIELD DOCUMENTATION:

Field documentation was complete.

12. OTHER PROBLEMS:

Lab sample IDs were not placed on the USEPA forms. The lab file IDs contained the lab IDs, which allowed all data to be correlated correctly. Qualification of the data was not necessary.

13. This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified to be used.

Sample S-1B was analyzed at three dilution factors, 1, 2, and 10. It is the professional opinion of the validator that the original results (dilution factor of 1) be used to report the data. The E qualified Xylene result should be considered estimated (J).

ATTACHMENT 2

Organic Regional Data Assessment Summary

DPO: [ ]ACTION [ ]FYI REGION II

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE/SAS NO.: ___ **LABORATORY:** _____

SDG NO.: _____ **DATA USER:** EPA Region II

SOW: OLM03.2 **REVIEW COMPLETION DATE:** _____

NO. OF SAMPLES: __ **WATER** __ **SOIL** __ **OTHER**

REVIEWER: [ ] **ESD** [ ] **ESAT** [ ] **OTHER, CONTRACTOR** _____

QC ITEM	VOA	BNA	PEST		
HOLDING TIMES					
GC-MS PERFORMANCE					
INITIAL CALIBRATIONS					
CONTINUING					
FIELD BLANKS(F = N/A)					
LABORATORY BLANKS					
SURROGATES					
MATRIX					
QC SAMPLES(LCS, PVS)					
INTERNAL STANDARDS					
COMPOUND					
COMPOUND					
SYSTEM PERFORMANCE					
OVERALL ASSESSMENT					

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS:_____

_____

AREAS OF CONCERN:_____

ATTACHMENT 3

Data Rejection Summary

DATA REJECTION SUMMARY

Type of Review: _____ **Date:** _____ **Case No.:** _____

Site Name: _____ **Lab Name:** _____

Reviewer's Initials: _____ **Number of Samples:** _____

Analytes Rejected Due to Exceeding Review Criteria For:

No. of Compounds/No. of Fractions (Samples)

	Surrogates	Holding Time	Calibration	Contamination	ID	Internal Standards	Other	Total # of Samples	Total # Rejected/Total # in All Samples
VOA(33)									/ = %
ACID(14)									/ = %
B/N(50)									/ = %
PEST(21)									/ = %
PCB(7)									/ = %

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITERIA.

Analytes Estimated Due to Exceeding Review Criteria For:

No. of Compounds/No. of Fractions (Samples)

	Surrogates	Holding Time	Calibration	Contamination	ID	Internal Standards	Other	Total # of Samples	Total # Estimated/Total # in All Samples
VOA(33)									/ = %
ACID(14)									/ = %
B/N(50)									/ = %
PEST(21)									/ = %
PCB(7)									/ = %

[redacted]

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITERIA.

APPENDIX A

DATA VALIDATION SUMMARY REPORTS

LEAD AND ARSENIC DATA VALIDATION FOR SOIL SAMPLES COLLECTED IN DECEMBER 1997

ARCADIS GERAGHTY & MILLER

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: _____ DATE: _____
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: _____
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: _____
Robert Runyon, Chief
Monitoring Management Branch

Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 **Scope**

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 **Responsibilities** - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a **total review**:

2.1.1 **Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1).**
The reviewer must answer every question on the checklist.

2.1.2 **Data Assessment - Data Assessment Narrative (Appendix A.2)**
The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 **Contract Non-Compliance - SMO Report (Appendix A.3)**
This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of
Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract
violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 **CLP Data Assessment Summary Forms**

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment
form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 **Data Review Log**: It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 **Forwarded Paperwork**

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:

a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:

a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**

Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present?	[___]	___	__X_
ACTION: If no, contact RSCC.			
X A.1.2 **Record of Communication (from RSCC)** - Present?	[___]	___	___
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present and complete?	[___]	___	__X_
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present?	[_X__]	___	___
Legible?	[__X_]	___	___
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[_X_]	___	___
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[___]	___	_X__
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[___]	___	_X__
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[_X__]	___	___
(b) Form I's?	[__X_]	___	___
ACTION: If no for any of the above, contact RSCC for clarification.			

A.1.6 **Form I to IX**	Yes	No	N/A
A.1.6.1 Are all the Form I through Form IX labeled with:			
Laboratory name?	[___]	__X_	___
Case/SAS number?	[___]	__X_	___
EPA sample No.?	[__X_]	___	___
SDG No.?	[_X__]	___	___
Contract No.?	[___]	___	__X_
Correct units?	[__X_]	___	___
Matrix?	[_X__]	___	___

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:

(**NOTE:** Check all forms against raw data.)

(a) all analytes analyzed by ICP?	[_X__]	___	___
(b) all analytes analyzed by GFAA?	[___]	___	_X__
(c) all analytes analyzed by AA Flame?	[___]	___	_X__
(d) Mercury?	[___]	___	__X_
(e) Cyanide?	[___]	___	_X__

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	**Raw Data**			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[_X__]	___	___
	Digestion Log for furnace AA Form XIII present?	[___]	___	__X_
	Distillation Log for mercury Form XIII present?	[___]	___	_X__
	Distillation Log for cyanides Form XIII present?	[___]	___	_X__
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[_X__]	___	___
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[_X__]	___	___
	Are preparation dates present on sample preparation logs/bench sheets?	[_X__]	___	___
A.1.7.2	Measurement read out record present? ICP	[__X_]	___	___
	Flame AA	[___]	___	_X__
	Furnace AA	[___]	___	_X__
	Mercury	[___]	___	__X_
	Cyanides	[___]	___	_X__
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[_X__]	___	___
	Legible?	[__X_]	___	___
	Properly Labeled?	[__X_]	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

		YES	NO	N/A
A.1.8	**Holding Times** - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[___]	__X_
	Cyanide distillation (14 days). . . . . exceeded?	___	[___]	__X_
	Other Metals analysis (6 months). . . . exceeded?	___	[_X__]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[__X_]	___
	Cyanides Analysis <12?	___	[___]	__X_
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	**Form I (Final Data)**			
A.1.9.1	Are all Form I's present and complete?	[_X__]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[_X__]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[_X__]	___	___
	Are all "less than IDL" values properly coded with "U"?	[_X__]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[__X_]	___	___
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[_X__]	___	___
	Was a brief physical description of samples given on Form I's?	[___]	_X__	___
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	___	[_X__]	___
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			
A.1.10	**Calibration**			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[_X__]	___	___
	Is record of 5 point calibration present for Hg analysis?	[___]	___	__X_
	Is record of 4 point calibration present for:			
	Flame AA?	[___]	___	__X_
	Furnace AA?	[___]	___	_X__
	Cyanides?	[___]	___	_X__
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[__X_]	___	___
	ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".			

		YES	NO	N/A
A.1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?	___	[___]	_X__
	Cyanide Analysis?	___	[___]	_X__
	Atomic Absorption Analysis?	___	[___]	_X__

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[___]	___	__X_

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 **Form II A (Initial and Continuing Calibration Verification)-**

A.1.11.1	Present and complete for every metal and cyanide?	[_X__]	___	___
	Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	_X__

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2	Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
	Metals- 90-110%R?	[_X__]	___	___
	Hg - 80-120%R?	[___]	___	_X__
	Cyanides- 85-115%R?	[___]	___	_X__

		YES	NO	N/A
	ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3	Was continuing calibration performed every 10 samples or every 2 hours?	[_X__]	___	___
	Was ICV for cyanides distilled?	[___]	___	_X__
	ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12	**Form II B (CRDL Standards for AA and ICP)** -			
A.1.12.1	Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[___]	___	_X__
	Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	__X_
	Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[_X__]	___	___
	ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL ICP Analysis - **True Value ± 2CRDL CN Analysis - **True Value ± 0.5 x True Value.			

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[___]	___	_X__
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits:			
	Metals 80 - 120%R?	[___]	__X_	___
	Is mid-range standard within control limits:			
	Cyanide 80 - 120%R?	[___]	___	__X_
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.13.1	Present and complete?	[_X__]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	__X_
	Was an initial calibration blank analyzed?	[_X__]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[__X_]	___	___

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[_X__]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[_X__]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	**FORM III (Preparation Blank) -** (**Note:** The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[_X__]	___	___
	each batch of digested samples?	[_X__]	___	___
	each matrix type?	[_X__]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	__X_
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[__X_]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	__X_
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[_X__]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[__X_]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	**Form IV (ICP Interference Check Sample)**			
A.1.15.1	Present and complete?	[_X__]	___	___
	(**NOTE:** Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[__X_]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[__X_]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	__X_

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)** - (**Note:** Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[_X__]	___	___
	each matrix type?	[_X__]	___	___
	each conc. range (i.e. low, med., high)?	[_X__]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	__X_
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[__X_]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[_X__]	___	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	___	__X_

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[_X__]	___	___
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

A.1.16.4 **Aqueous**

Are any spike recoveries:

(a) less than 30%?	___	[___]	_X__
(b) between 30-74%?	___	[___]	_X__
(c) between 126-150%?	___	[___]	_X__
(d) greater than 150%?	___	[___]	__X_

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 **Soil/Sediment**

Are any spike recoveries:

(a) less than 10%?	___	[__X_]	___
(b) between 10-74%?	___	[_X__]	___
(c) between 126-200%?	___	[__X_]	___
(d) greater than 200%?	___	[__X_]	___

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	**Form VI (Lab Duplicates)**			
A.1.17.1	Present and complete for: each SDG?	[_X__]	___	___
	each matrix type?	[_X__]	___	___
	each concentration range (i.e. low, med., high)?	[_X__]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	__X_
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[_X__]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[__X_]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	__X_
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 **Aqueous**

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	__X_
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	_X__

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 **Soil/Sediment**

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[__X_]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[__X_]	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	**Field Duplicates**			
A.1.18.1	Were field duplicates analyzed?	[___]	__X_	___

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 **Aqueous**

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	__X_
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	_X__

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.18.3	**Soil/Sediment**			
	Circle all values on self prepared Form VI for field duplicates that are:			
	RPD >100%, or			
	Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) :			
	>100%?	___	[___]	__X_
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL):			
	>2x *CRDL?	___	[___]	__X_
	ACTION: If yes, flag the associated data as estimated.			
A.1.19	**Form VII (Laboratory Control Sample)** (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1	Was one LCS prepared and analyzed for:			
	each SDG?	[__X_]	___	___
	each batch samples digested/distilled?	[__X_]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	_X__
	ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.			
	NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.19.2	**Aqueous LCS**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[___]	_X__
	between 50% and 79%?	___	[___]	_X__
	between 121% and 150%?	___	[___]	_X__
	greater than 150%?	___	[___]	_X__
	ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.			
A.1.19.3	**Solid LCS**			
	NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).			
	2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.			
	Is LCS "Found" value higher than the control limits on Form VII?	___	[_X__]	___
	ACTION: If yes, qualify all associated positive data as estimated.			
	Is LCS "Found" value lower than the Control limits on Form VII?	___	[__X_]	___
	ACTION: If yes, qualify all associated data as estimated.			

		YES	NO	N/A
A.1.20	**Form IX (ICP Serial Dilution) -**			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for:			
	each SDG?	[__x_]	___	___
	each matrix type?	[_X__]	___	___
	each concentration range (i.e. low, med.)?	[_X__]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[__X_]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[___]	___	___
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	___	[__X_]	__
	≥ 100%?	___	[_X__]	___

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[___]	___	_X__
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[___]	___	_X__
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[___]	___	__X_
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	_X__
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	**Form VIII (Method of Standard Addition Results)**			
A.1.22.1	Present?	[___]	_X__	___
	If no, is any Form I result coded with "S" or a "+"?	___	[__X_]	___
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	_X__
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	___	[___]	_X__
	Is coefficient of correlation for MSA less than 0.995?	___	[___]	_X__
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	_X__
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	_X__
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

		YES	NO	N/A
A.1.23	**Dissolved/Total or Inorganic/Total Analytes** -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[___]	_X__
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[___]	_X__
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	_X__
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	_X__
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	**Form I (Field Blank)** -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2. x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	_X__

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[___]	___	__X_

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 **Form X, XI, XII (Verification of Instrumental Parameters).**

A.1.25.1 Is verification report present for:			
Instrument Detection Limits (quarterly)?	[_X__]	___	___
ICP Interelement Correction Factors (annually)?	[_X__]	___	___
ICP Linear Ranges (quarterly)?	[_X__]	___	___

ACTION: If no, contact TPO of the lab.

A.1.25.2 **Form X (Instrument Detection Limits)** - (Note: IDL is not required for Cyanide.)			
A.1.25.2.1 Are IDLs present for: all the analytes?	[__X_]	___	___
all the instruments used?	[__X_]	___	___
For both AA and ICP when both are used for the same analyte?	[___]	___	_X__

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?	___	[__X_]	___
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[___]	___	___

		YES	NO	N/A
	Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3	**Form XI (Linear Ranges)**			
A.1.25.3.1	Was any sample result higher than high linear range of ICP.	___	[_X__]	___
	Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[_X__]	___
	If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	__X_
	ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26	**Percent Solids of Sediments**			
A.1.26.1	Are percent solids in sediment(s): < 50%?	___	[__X_]	___
	< 10%?	___	[__X_]	___
	ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).			
	NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.			

Case# _____ **Site** ___Ringwood New Jersey **Matrix:** **Soil** ___X___

SDG# _____PE1_____ **Lab** ___Quanterra_____ **Water**_____

Contractor ARCADIS Geraghty & Miller **Reviewer** John Burke **Other**_____

A.2.1 **Validation Flags-** The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as **estimated**

Red- Line- A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is given below and on the attached sheets.

This SDG contains three soil samples and one seep sample collected in December 1997.

Arsenic and lead were the only parameters analyzed. Qualification of the data was not necessary based on this data review.

A.2.2 (continuation)

A.2.2 (continuation)

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: 6/18/92
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste Site Contract Laboratory Data Package

CASE NO._____

The hardcopied (laboratory name)_____ inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:

SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

_____ Reviewer's Initial

_____ Date

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Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Inorganic Analysis

Date: Jan. 1992
Number: HW-2
Revision: 11

INORGANIC REGIONAL DATA ASSESSMENT Region_____

CASE NO._____ SITE_____

LABORATORY_____ NO. OF SAMPLES/ MATRIX_____

SDG#_____ REVIEWER (IF NOT ESD)_____

SOW#_____ REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____ COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

METALS DATA VALIDATION FOR SOIL SAMPLES COLLECTED IN APRIL 1998

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: _____ DATE: _____
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: _____
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: _____
Robert Runyon, Chief
Monitoring Management Branch

Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 **Scope**

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 **Responsibilities** - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a **total review**:

2.1.1 **Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1).** The reviewer must answer every question on the checklist.

2.1.2 **Data Assessment - Data Assessment Narrative (Appendix A.2)** The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 **Contract Non-Compliance - SMO Report (Appendix A.3)** This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 **CLP Data Assessment Summary Forms**

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 **Data Review Log**: It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 **Forwarded Paperwork**

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:

a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:

a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**

Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete,the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present?	[___]	___	__X_
ACTION: If no, contact RSCC.			
X A.1.2 **Record of Communication (from RSCC)** - Present?	[___]	___	___
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present and complete?	[___]	___	__X_
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present?	[_X__]	___	___
Legible?	[__X_]	___	___
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[_X_]	___	___
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[___]	___	_X__
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[___]	___	_X__
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[_X__]	___	___
(b) Form I's?	[__X_]	___	___
ACTION: If no for any of the above, contact RSCC for clarification.			

A.1.6 **Form I to IX**	Yes	No	N/A
A.1.6.1 Are all the Form I through Form IX labeled with:			
Laboratory name?	[___]	__X_	___
Case/SAS number?	[___]	__X_	___
EPA sample No.?	[__X_]	___	___
SDG No.?	[_X__]	___	___
Contract No.?	[___]	___	__X_
Correct units?	[__X_]	___	___
Matrix?	[_X__]	___	___

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:

(**NOTE:** Check all forms against raw data.)

(a) all analytes analyzed by ICP?	[_X__]	___	___
(b) all analytes analyzed by GFAA?	[___]	___	_X__
(c) all analytes analyzed by AA Flame?	[___]	___	_X__
(d) Mercury?	[___]	___	__X_
(e) Cyanide?	[___]	___	_X__

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	**Raw Data**			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[_X__]	___	___
	Digestion Log for furnace AA Form XIII present?	[___]	___	__X_
	Distillation Log for mercury Form XIII present?	[___]	___	_X__
	Distillation Log for cyanides Form XIII present?	[___]	___	_X__
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[_X__]	___	___
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[_X__]	___	___
	Are preparation dates present on sample preparation logs/bench sheets?	[_X__]	___	___
A.1.7.2	Measurement read out record present? ICP	[__X_]	___	___
	Flame AA	[___]	___	_X__
	Furnace AA	[___]	___	_X__
	Mercury	[___]	___	__X_
	Cyanides	[___]	___	_X__
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[_X__]	___	___
	Legible?	[__X_]	___	___
	Properly Labeled?	[__X_]	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

		YES	NO	N/A
A.1.8	**Holding Times** - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[___]	__X_
	Cyanide distillation (14 days). . . . . exceeded?	___	[___]	__X_
	Other Metals analysis (6 months). . . . exceeded?	___	[_X__]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[__X_]	___
	Cyanides Analysis <12?	___	[___]	__X_
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	**Form I (Final Data)**			
A.1.9.1	Are all Form I's present and complete?	[_X__]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[_X__]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[_X__]	___	___
	Are all "less than IDL" values properly coded with "U"?	[_X__]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[__X_]	___	___
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[_X__]	___	___
	Was a brief physical description of samples given on Form I's?	[___]	_X__	___
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	___	[_X__]	___
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			
A.1.10	**Calibration**			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[_X__]	___	___
	Is record of 5 point calibration present for Hg analysis?	[___]	___	__X_
	Is record of 4 point calibration present for:			
	Flame AA?	[___]	___	__X_
	Furnace AA?	[___]	___	_X__
	Cyanides?	[___]	___	_X__
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[__X_]	___	___
	ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".			

		YES	NO	N/A
A.1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?	___	[___]	_X__
	Cyanide Analysis?	___	[___]	_X__
	Atomic Absorption Analysis?	___	[___]	_X__

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height,etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[___]	___	__X_

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 **Form II A (Initial and Continuing Calibration Verification)-**

A.1.11.1	Present and complete for every metal and cyanide?	[_X__]	___	___
	Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	_X__

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2	Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
	Metals- 90-110%R?	[_X__]	___	___
	Hg - 80-120%R?	[___]	___	_X__
	Cyanides- 85-115%R?	[___]	___	_X__

		YES	NO	N/A
	ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3	Was continuing calibration performed every 10 samples or every 2 hours?	[_X__]	___	___
	Was ICV for cyanides distilled?	[___]	___	_X__
	ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12	**Form II B (CRDL Standards for AA and ICP)** -			
A.1.12.1	Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[___]	___	_X__
	Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	__X_
	Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[_X__]	___	___
	ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL ICP Analysis - **True Value ± 2CRDL CN Analysis - **True Value ± 0.5 x True Value.			

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[___]	___	_X__

ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".

A.1.12.3 Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.

Are CRA and CRI standards within control limits:

Metals	80 - 120%R?	[___]	__X_	___

Is mid-range standard within control limits:

Cyanide	80 - 120%R?	[___]	___	__X_

ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.

Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.

A.1.13 **Form III (Initial and Continuing Calibration Blanks)**

A.1.13.1	Present and complete?	[_X__]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	__X_
	Was an initial calibration blank analyzed?	[_X__]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[__X_]	___	___

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[_X__]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[_X__]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	**FORM III (Preparation Blank)** - (**Note:** The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[_X__]	___	___
	each batch of digested samples?	[_X__]	___	___
	each matrix type?	[_X__]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	__X_
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[__X_]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	__X_
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[_X__]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[__X_]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	**Form IV (ICP Interference Check Sample)**			
A.1.15.1	Present and complete?	[_X__]	___	___
	(**NOTE:** Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[__X_]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[__X_]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	__X_

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)-** (**Note:** Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[_X__]	___	___
	each matrix type?	[_X__]	___	___
	each conc. range (i.e. low, med., high)?	[_X__]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	__X_
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[__X_]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[_X__]	___	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	___	__X_

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[_X__]	___	___
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

A.1.16.4 **Aqueous**

Are any spike recoveries:

(a) less than 30%?	___	[___]	_X__
(b) between 30-74%?	___	[___]	_X__
(c) between 126-150%?	___	[___]	_X__
(d) greater than 150%?	___	[___]	__X_

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 **Soil/Sediment**

Are any spike recoveries:

(a) less than 10%?	___	[__X_]	___
(b) between 10-74%?	___	[_X__]	___
(c) between 126-200%?	___	[__X_]	___
(d) greater than 200%?	___	[__X_]	___

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	**Form VI (Lab Duplicates)**			
A.1.17.1	Present and complete for: each SDG?	[_X__]	___	___
	each matrix type?	[_X__]	___	___
	each concentration range (i.e. low, med., high)?	[_X__]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	__X_
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[_X__]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[__X_]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	__X_
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 **Aqueous**

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	__X_
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	_X__

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 **Soil/Sediment**

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) :			
> 100%?	___	[__X_]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) :			
> 2x*CRDL?	___	[__X_]	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	**Field Duplicates**			
A.1.18.1	Were field duplicates analyzed?	[___]	__X_	___
	ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.			
	NOTE: 1. Do not calculate RPD when both values are less than IDL. 2. Flag all associated data only for field duplicate pair.			
A.1.18.2	**Aqueous**			
	Circle all values on self prepared Form VI for field duplicates that are: RPD > 50%, or Difference > CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	__X_
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	_X__
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.18.3	**Soil/Sediment**			
	Circle all values on self prepared Form VI for field duplicates that are: RPD >100%, or Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[___]	__X_
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[___]	__X_
	ACTION: If yes, flag the associated data as estimated.			
A.1.19	**Form VII (Laboratory Control Sample)** (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1	Was one LCS prepared and analyzed for:			
	each SDG?	[__X_]	___	___
	each batch samples digested/distilled?	[__X_]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	_X__
	ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.			
	NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.19.2	**Aqueous LCS**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[___]	_X__
	between 50% and 79%?	___	[___]	_X__
	between 121% and 150%?	___	[___]	_X__
	greater than 150%?	___	[___]	_X__
	ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.			
A.1.19.3	**Solid LCS**			
	NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).			
	2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.			
	Is LCS "Found" value higher than the control limits on Form VII?	___	[_X__]	___
	ACTION: If yes, qualify all associated positive data as estimated.			
	Is LCS "Found" value lower than the Control limits on Form VII?	___	[__X_]	___
	ACTION: If yes, qualify all associated data as estimated.			

		YES	NO	N/A
A.1.20	**Form IX (ICP Serial Dilution)** -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for:			
	each SDG?	[___]	_X__	___
	each matrix type?	[___]	___	_X__
	each concentration range (i.e. low, med.)?	[___]	___	_X__
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[___]	_X__
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[___]	___	__X_
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	___	[___]	_X__
	≥ 100%?	___	[___]	__X_

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[___]	___	_X__
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[___]	___	_X__
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[___]	___	__X_
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	_X__
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	**Form VIII (Method of Standard Addition Results)**			
A.1.22.1	Present?	[___]	_X__	___
	If no, is any Form I result coded with "S" or a "+"?	___	[__X_]	___
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	_X__
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	___	[___]	_X__
	Is coefficient of correlation for MSA less than 0.995?	___	[___]	_X__
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	_X__
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	_X__
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

		YES	NO	N/A
A.1.23	**Dissolved/Total or Inorganic/Total Analytes** -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[___]	_X__
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[___]	_X__
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	_X__
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	_X__
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	**Form I (Field Blank)** -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	_X__

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[___]	___	__X_

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 **Form X, XI, XII (Verification of Instrumental Parameters).**

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	[_X__]	___	___
ICP Interelement Correction Factors (annually)?	[_X__]	___	___
ICP Linear Ranges (quarterly)?	[_X__]	___	___

ACTION: If no, contact TPO of the lab.

A.1.25.2 **Form X (Instrument Detection Limits)** - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[__X_]	___	___
all the instruments used?	[__X_]	___	___
For both AA and ICP when both are used for the same analyte?	[___]	___	_X__

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?	___	[__X_]	___
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[___]	___	___

		YES	NO	N/A
	Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3	**Form XI (Linear Ranges)**			
A.1.25.3.1	Was any sample result higher than high linear range of ICP.	___	[_X__]	___
	Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[_X__]	___
	If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	__X_
	ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26	**Percent Solids of Sediments**			
A.1.26.1	Are percent solids in sediment(s): < 50%?	___	[__X_]	___
	< 10%?	___	[__X_]	___
	ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).			
	NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.			

Case# _____ **Site** ___Ringwood New Jersey **Matrix:** **Soil** ___X____

SDG# _____E07103_____ **Lab** ___Quanterra_____ **Water**_____

Contractor ARCADIS Geraghty & Miller **Reviewer** John Burke **Other**_____

A.2.1 **Validation Flags-** The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as **estimated**

Red- Line- A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is given below and on the attached sheets.

This SDG contains soil samples collected in April 1998.

Samples were analyzed using USEPA Method 6010. Therefore, quality control requirements of Method 6010 were used to review the data. Arsenic and lead were the only parameters analyzed. Qualification of the data was not necessary based on this data review.

A.2.2 (continuation)

A.2.2 (continuation)

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: 6/18/92
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO._____

The hardcopied (laboratory name)_____ inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:

SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

_____ Reviewer's Initial

_____ Date

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INORGANIC REGIONAL DATA ASSESSMENT Region_____

CASE NO._____ SITE_____

LABORATORY_____ NO. OF SAMPLES/ MATRIX_____

SDG#_____ REVIEWER (IF NOT ESD)_____

SOW#_____ REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____ COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CYANIDE
1. HOLDING TIMES				
2. CALIBRATIONS				
3. BLANKS				
4. ICS				
5. LCS				
6. DUPLICATE ANALYSIS				
7. MATRIX SPIKE				
8. MSA				
9. SERIAL DILUTION				
10. SAMPLE VERIFICATION				
11. OTHER QC				
12. OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

ORGANIC DATA VALIDATION FOR SOIL SAMPLES COLLECTED IN APRIL 1998

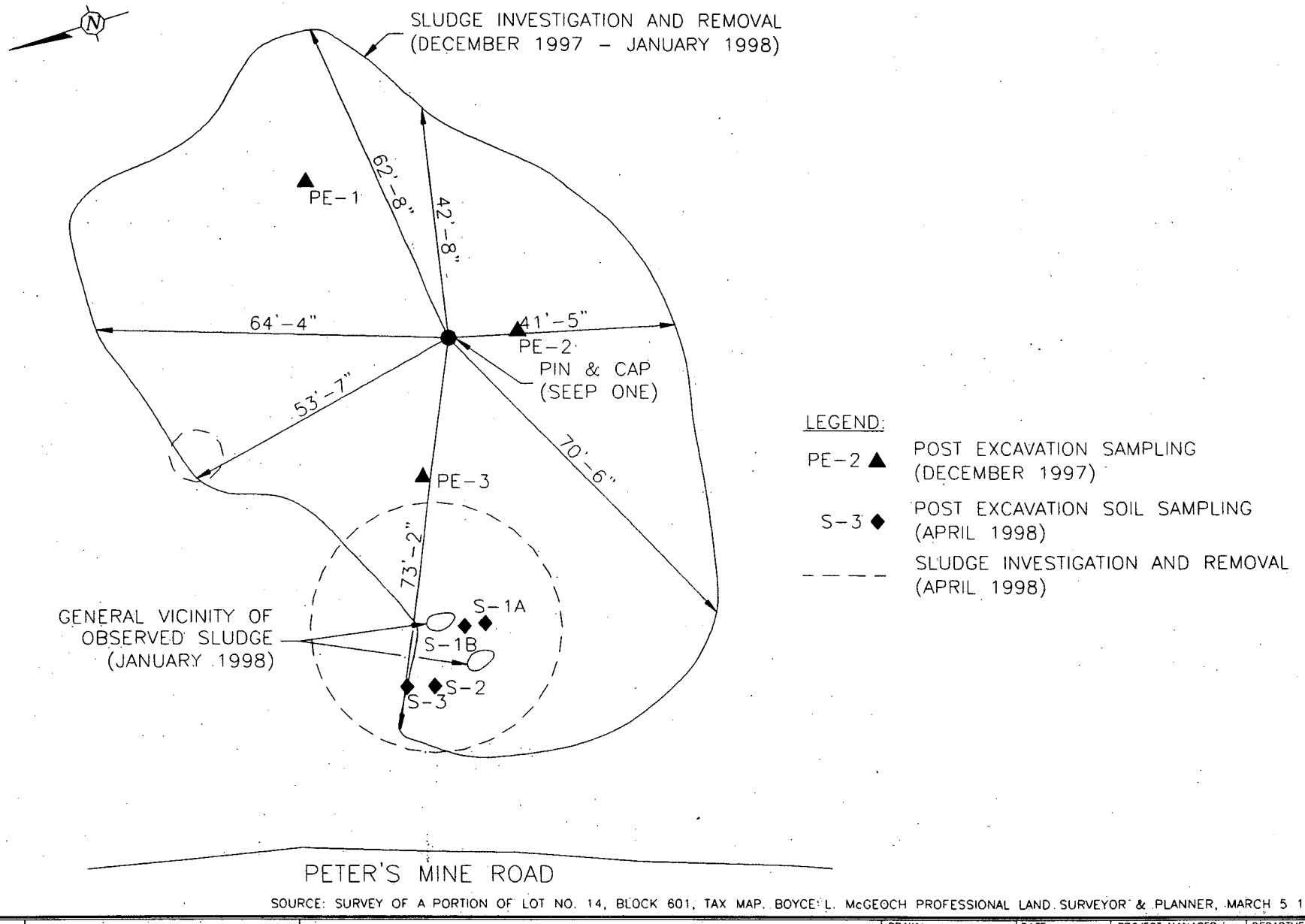
Table 1 Summary of Arsenic, Lead and Volatile Organic Analysis for Samples Collected in December 1997 and April 1998
Ringwood Mines/Landfill Site, Ringwood, New Jersey

	Sample No.	FB-12/17/98	Seep-1		NJDEP
	Lab sample No.	CEVQR	CEVQL		Groundwater
	Date submitted	12/17/97	12/15/97		Quality
Metals (ug/L)	Matrix	Water	Water		Criteria
Arsenic		<3.2	<3.2		8
Lead		2.3 B	3.1		10

	Sample No.	PE-1	PE-2	PE-3	S-1A	S-1B	S-2	S-3	NJDEP
	Lab sample No.	CEVQM	CEVQP	CEVQQ	A8E07013-001	A8E07013-001	A8E07013-001	A8E07013-001	Restricted Use
	Date submitted	12/17/97	12/17/97	12/17/97	4/28/98	4/28/98	4/28/98	4/28/98	Soil Criteria
Metals (mg/kg)	Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
Arsenic		4.7	5	7.6	3.5	3.2	4.4	2.9	20
Lead		132	128	503	8.4	10.5	104	15.6	600
VOAs (mg/kg)		N/A	N/A	N/A			N/A	N/A	
Acetone					U	0.039J			1,000
Methylene Chloride					0.023	0.034J			210
Ethylbenzene					0.007J	U			1,000
Total Xylene					0.043	0.037			1,000

Notes:

N/A	Not analyzed
mg/kg	milligram per kilogram
ug/L	micrograms per Liter
FB	Field Blank
J	Estimated value
U	Undetected
B	Compound is detected between the instrument detection limit and the contract required detection limit



SOURCE: SURVEY OF A PORTION OF LOT NO. 14, BLOCK 601, TAX MAP. BOYCE L. McGEOCH PROFESSIONAL LAND SURVEYOR & PLANNER, MARCH 5 1998.

0 30 FEET

G:\APROJECT\DRAFTING\RINGWOOD\RING0002.DWG

ARCADIS GERAGHTY & MILLER

DRAWN M. WASILEWSKI	DATE 6/19/98	PROJECT MANAGER A. VERNICK	DEPARTMENT MANAGER
SLUDGE REMOVAL DECEMBER 1997 - APRIL 1998		LEAD DESIGN PROF.	CHECKED R. McINTYRE
RINGWOOD MINES/LANDFILL SITE RINGWOOD BOROUGH PASSAIC COUNTY, NEW JERSEY		PROJECT NUMBER NJ000173.0006	DRAWING NUMBER FIGURE 1

APPENDIX B

TRUCKING AND SHIPPING MANIFESTS

THE ENVIRONMENTAL QUALITY COMPANY ®

Customer Acct #10072

Notice of Waste Approval Expiration
November 18, 1997

ENVIRONMENTAL MANAGER
GERAGHTY & MILLER, INC.
125 EAST BETHPAGE ROAD
PLAINVIEW, NY 11803

60 DAY NOTICE

Thank you for selecting EQ as your environmental management partner. Our annual review has determined that the following Approval(s) are scheduled to expire on the date(s) noted below:

Approval # / Generator ID	Container	Waste Code / Common Name / Generator Name	Expiration Date	Reapprove? (Circle One)
1062372 NJD002405801	DRUM	D008 / PAINT SLUDGE FMC - MAHWAH ASSEMBLY	August 11, 1997	(Y) N
1062372T NJD002405801	TONS	D008 / PAINT SLUDGE FMC - MAHWAH ASSEMBLY	October 7, 1997	(Y) N

To ensure uninterrupted service, please select one of the following recertification options:

NON-PROCESS CHANGES: If each waste stream has been properly documented, characterized and approved, and the process has not changed, please circle "Y" for YES next to the corresponding Approval Number. If you do not wish to obtain a reauthorized Approval, please circle "N" for NO next to the corresponding Approval Number. An authorized generator signature is required at the bottom of this Notice. Upon completion, please fax to the EQ Customer Satisfaction Department at 1-800-KWALFAX (592-5329) for immediate processing.

PROCESS CHANGES OR AMENDMENTS: If the process generating the waste has changed, please call the EQ Customer Satisfaction Department at 1-800-KWALITY (592-5489) for immediate assistance. Thank you for your continued patronage.

I, _____, Christopher J. Motta (on behalf of Ford Motor Co.) [FMC]
(Authorized Generator Signature) *(Printed Generator Name)*

hereby certify that I have reviewed the waste stream file(s) for the Approvals listed above and have determined that the processes generating the above wastes have not changed over the past year and that all information is accurate and complete.

Company Name: Geraghty & Miller, Inc (on behalf of FMC) Date: 11/21/97

YOUR BUSINESS. OUR SOLUTIONS. A PRODUCTIVE PARTNERSHIP.®

UNIVERSAL EQ CERTIFICATION (11/97)

LAND DISPOSAL RESTRICTION FORM

SUBPART CC WASTE DETERMINATION CERTIFICATION AND SURCHARGE EXEMPTION NOTIFICATION

Michigan Disposal Waste Treatment Plant 49350 N. I-94 Service Dr. Belleville, MI 48111 Ph: 800-592-5489 Fx:800-592-5329
Wayne Disposal, Inc. 49350 N. I-94 Service Dr. Belleville, MI 48111 Ph: 800-592-5489 Fx:800-592-5329
Michigan Recovery Systems, Inc. 36345 Van Born Rd. Romulus, MI 48174 Ph: 800-521-0998 Fx:313-326-5671

Please Check One: ☒ MDWTP ☐ WDI ☐ MRSI

Generator Name Ford Motor Co (FMC)-Mahwah Assembly Manifest Doc. No./Approval #/T# 1062372

Parkllane Towers East, Suite 1400

Generator Address One Parklane Boulevard, Dearborn Michigan 48120

Generator USEPA ID No. NJD002405801 State Manifest No.

INSTRUCTIONS

- In Column 1 identify all USEPA hazardous waste codes that apply to this waste approval shipment in the spaces provided below.
- In Column 2, identify the appropriate treatability group for each waste code: Non-Wastewater (NWW) or Wastewater (WW).
- In Column 3, in accordance with Subpart CC identify whether or not your waste contains >500 ppmw VOC (YES or NO), as identified as CCVOC in Attachment 1.
- In Column 4, enter the appropriate Subcategory, (See 268.40), if applicable, and also enter "Debris" if the waste is debris that will be treated using one of the alternative treatment technologies provided by 268.45.
- In Column 5, reference the appropriate paragraph(s) from Page 2 and 3 of this form. If your waste is surcharge exempt, please fill out paragraph N (On page 3).
- To expedite your approval, specify the concentration level of each constituent identified in your waste stream on Attachment 1. When shipping your waste, transfer the appropriate Reference Number(s) from Table 1 to Column 6 below, concentration data does not need to be entered in Attachment 1. [If the waste is a California List Waste, complete the boxes below appropriately and identify (in Column 6) the Reference Number(s) of the appropriate California List constituent(s) found in Attachment 1, Table 3.]

MAIN LINE ITEM #	1. HAZARDOUS WASTE CODE(S)	2. NWW or WW	3. SUBPART CC YES/NO	4. SUBCATEGORY	5. HOW MUST THE WASTE BE MANAGED?	6. REFERENCE NUMBER(S)
11.A	D008	NWW	YES	Not Applicable	A	Not Applicable
11.B						
11.C						
11.D						

I certify that this waste contains < 1.3% MVOC constituents for hazardous and non-hazardous waste as specified in the MVOC list provided in this form. I hereby certify that all information submitted on this and all associated documents is complete and accurate to the best of my knowledge and information.

Generator Signature [signature] on behalf of Ford Motor Company Title Principal Scientist

Printed Name Christopher J. Motta Date 11/21/97

DNR

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Act 64, P.A. 1979, as amended and Act 136, P.A. 1969.

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969.

Please print or type.

Form Approved. OMB No. 2050-0039 Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NJD002405801 Manifest Document No. 941977

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
FORD MOTOR CO. / FORMER MAHWAH, NJ ASSEMBLY PLANT
40 EQO 15201 CENTURY DRIVE, SUITE 608
DEARBORN, MI 48120

4. Generator's Phone (313) 322-4646

A. State Manifest Document Number MI 941977

B. State Generator's ID PETERS MINE ID - MAHWAH, NJ

C. State Transporter's ID AC-4176

5. Transporter 1 Company Name
FREEHOLD CARTAGE, INC

6. US EPA ID Number
NJTD054112164

D. Transporter's Phone 908-462-3313

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
MICHIGAN DISPOSAL, INC
49350 N. I-94 SERVICE DR.
BELLEVILLE, MI 48114

10. US EPA ID Number
MID980724831

G. State Facility's ID

H. Facility's Phone 313-697-2200

11. US DOT Description (including Proper Shipping Name, Hazard Class, and HM ID NUMBER).	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.	N/H
a. X RQ HAZARDOUS WASTE SOLID, NOS (LEAD) CLASS 9 NA3077 PG III	XX1	CM	XX.X28	Y	D008	
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
APPROVAL # 106237T
RQ = 10#
Box 9207 C.F. ERG # 171

K. Handling Codes for Wastes Listed Above
a/ /
b/ /
c/ /
d/ /

15. Special Handling Instructions and Additional Information
EMERGENCY CONTACT & PHONE # CHRIS MOTTA (201) 236-2233

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. TO THE BEST OF MY KNOWLEDGE AND BELIEF,

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name ON BEHALF OF FORD MOTOR CO: CHRISTOPHER J. MOTTA

Signature

Date Month Day Year 02 02 98

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name DENNIS J. HIGGINS

Signature G.K.

Date Month Day Year 02 02 98

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date Month Day Year

FACILITY

19. Discrepancy Indication Space
NOT RECEIVED 35,000 LBS or 17.5 TONS

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Date Month Day Year 02 11 98

ALL SHIPMENTS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING CENTER AT 1-800-292-4706 OR 1-800-24-8802 24 HOURS PER DAY.

DNR

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Act 64, P.A. 1979, as amended and Act 136, P.A. 1969.

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969.

Please print or type.

Form Approved. OMB No. 2050-0039 Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NJD 0 0 2 4 0 1 5 8 1 0 1 | Manifest Document No. 4 4 4 4 8 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
FORD MOTOR CO / FORMER MAHWAH, NJ ASSEMBLY PLANT
c/o EDS 15201 CENTURY DRIVE, SUITE 609
DEARBORN, MI 48120
4. Generator's Phone (313) 322 - 4646

A. State Manifest Document Number MI 3941978

B. State Generator's ID PETERS MINE RD. RINGWOOD, NJ

5. Transporter 1 Company Name: FREEHOLD CARTAGE, INC
6. US EPA ID Number: NJD 0 5 7 1 1 2 6 1 1 6 4
C. State Transporter's ID AC 1496 NJ
D. Transporter's Phone 908 - 462 - 3318

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
MICHIGAN DISPOSAL, INC
49350 N. I-94 SERVICE DR
BELLEVILLE, MI. 48111
10. US EPA ID Number: MI D 0 9 9 7 2 4 8 3 1
G. State Facility's ID
H. Facility's Phone 313 - 697 - 2200

	11. US DOT Description (including Proper Shipping Name, Hazard Class, and HM ID NUMBER).	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.	
a.	X RQ HAZARDOUS WASTE SOLID, NOS (LEAD) CLASS 9 NA3077 PG III	XX	CM	XXX	G	D008	Y
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
APPROVAL #1062372
RQ = 10#
Box 9207
ERG # 171

K. Handling Codes for Wastes Listed Above
a/ /
b/ /
c/ /
d/ /

15. Special Handling Instructions and Additional Information
EMERGENCY CONTACT & PHONE # CHRIS MOTTA (201) 236-2233

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. TO THE BEST OF MY KNOWLEDGE AND BELIEF,

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Printed/Typed Name: ON BEHALF OF FORD MOTOR CO: CHRISTOPHER J. MOTTA
Signature
Date: Month 10 Day 20 Year 98

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Gene Kerr
Signature: Gene Kerr
Date: Month 10 Day 26 Year 98

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space
MDI received 31400 lbs @ 15.71

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: [illegible] Heard
Signature
Date: Month 10 Day 29 Year 98

GENERATOR

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

DNR

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Act 64, P.A. 1979, as amended and Act 136, P.A. 1969.

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969.

Please print or type.

Form Approved. OMB No. 2050-0039 Expires 9-30-95

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NJD 0 0 2 4 0 5 8 9 1 | Manifest Document No. 4 7 9 7 1 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
FORD MOTOR CO / FORMER MAHWAH NJ ASSEMBLY PLANT
C/O EQU 15201 CENTURY DRIVE, SUITE 609
DEARBORN, MI 48120

4. Generator's Phone (313) 322-4646

A. State Manifest Document Number: MI 3941979

B. State Generator's ID: PETERSMINE RD. RINGWOOD NJ

5. Transporter 1 Company Name: FREEHOLD CARTAGE, INC

6. US EPA ID Number: N J T A 0 5 4 1 1 2 1 6 1 6 4

C. State Transporter's ID: AC747G NJ

D. Transporter's Phone: 908-462-3318

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
MICHIGAN DISPOSAL, INC
49350 N. I-94 SERVICE DR
BELLEVILLE, MI 48111

10. US EPA ID Number: M I D 0 9 9 7 2 1 4 8 3 1

G. State Facility's ID

H. Facility's Phone: 313-697-2200

11. US DOT Description (including Proper Shipping Name, Hazard Class, and HM ID NUMBER).	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.	N/H
a. X RQ HAZARDOUS WASTE SOLID, NOS (LEAD) CLASS 9 NA3077 PG III	X X	CM	X X 2	0	D008	
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
APPROVAL # ~~10623727~~ 10623727
RQ = 10#
Box 9444

K. Handling Codes for Wastes Listed Above
a/ /
b/ /
c/ /
d/ /

15. Special Handling Instructions and Additional Information
ERG #171
EMERGENCY CONTACT & PHONE # (201) 236-2233 CHRIS MOTTA

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. TO THE BEST OF MY KNOWLEDGE AND BELIEF,

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GENERATOR

Printed/Typed Name: ON BEHALF OF FORD MOTOR CO: CHRISTOPHER J. MOTTA

Signature

Date: Month 01 Day 21 Year 98

17. Transporter 1 Acknowledgement of Receipt of Materials

TRANSPORTER

Printed/Typed Name: Gene Kerr

Signature: Gene Kerr

Date: Month 01 Day 21 Year 98

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date: Month Day Year

19. Discrepancy Indication Space
NOT RECEIVED 41320 LBS AT 20.00 TONS

FACILITY

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Date: Month 01 Day 21 Year 98

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM IN MICHIGAN AT 1-800-292-4706 OR OUT-OF-STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

DNR
MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Act 64, P.A. 1979, as amended and Act 136, P.A. 1969.

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969.

Please print or type.

Form Approved. OMB No. 2050-0039 Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NJD010241015 Manifest Document No. 47980
2. Page 1 of 1
Information in the snaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
FORD MOTOR CO / FORMER MAHWAH NJ ASSEMBLY PLANT
C/O EQO 15201 CENTURY DRIVE, SUITE 603
DEARBORN, MI 48120
4. Generator's Phone (313) 322-4646

A. State Manifest Document Number MI 3941980
B. State Generator's ID PETERS MAC RD RINGWOOD NJ
C. State Transporter's ID NJ D054126164
D. Transporter's Phone 908-962-3318
E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID
H. Facility's Phone 313-697-2200

5. Transporter 1 Company Name FREEHOLD CARTAGE, INC
6. US EPA ID Number NJTD 0ST4 1121 6164
7. Transporter 2 Company Name
8. US EPA ID Number
9. Designated Facility Name and Site Address
MICHIGAN DISPOSAL, INC
49350 N. I-94 SERVICE DR
BELLEVILLE, MI 48111
10. US EPA ID Number MID 000724831

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER). HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.	N/H
a. X RQ HAZARDOUS WASTE SOLID, NOS (LEAD) CLASS 9 NA 3077 PG III	XX	CM	XXX20	Y	D008	
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
APPROVAL # ~~1062372~~ 1062372T
RQ = 10#

K. Handling Codes for Wastes Listed Above
a/ /
b/ /
c/ /
d/ /

15. Special Handling Instructions and Additional Information ERG # 171
EMERGENCY CONTACT & PHONE # CHRIS MOTTA (201) 236-2233

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. TO THE BEST OF MY KNOWLEDGE AND BELIEF.

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GENERATOR

Printed/Typed Name ON BEHALF OF FORD MOTOR CO: CHRISTOPHER J. MOTTA
Signature
Date Month 06 Day 02 Year 98

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Ed DOYLE
Signature Ed Doyle
Date Month 06 Day 02 Year 98

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date Month Day Year

FACILITY

19. Discrepancy Indication Space
MDI received 6/8/98 @ 1649

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name
Signature
Date Month 06 Day 08 Year 98

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 OR THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

DNR MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Act 64, P.A. 1979, as amended and Act 136, P.A. 1969.
Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969.

Please print or type.
Form Approved. OMB No. 2050-0039 Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NJD002405801 / Manifest Document No. 47981	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address: FORD MOTOR CO. (FMC) FORMER MAHWAH, NJ ASSEMBLY PLANT c/o ERO 15201 CENTURY DRIVE, SUITE 608 DEARBORN, MI 48120		A. State Manifest Document Number MI 3941981
4. Generator's Phone (313) 322-4646		B. State Generator's ID PETERS MILL RD RINGWOOD NJ
5. Transporter 1 Company Name: FREEHOLD CARTAGE, INC	6. US EPA ID Number NJD054126164	C. State Transporter's ID NJ 792 VW
		D. Transporter's Phone 908 462 3318
7. Transporter 2 Company Name	8. US EPA ID Number	E. State Transporter's ID
		F. Transporter's Phone
9. Designated Facility Name and Site Address: MICHIGAN DISPOSAL, INC 49350 N. I-94 SERVICE DR. BELLEVILLE, MI 48111	10. US EPA ID Number MID000724831	G. State Facility's ID
		H. Facility's Phone 313-697-2200

	HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER).	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	RQ HAZARDOUS WASTE SOLID, NOS (LEAD) CLASS 9 NA3077 PG III	X14	DM	X7000	P	D008
b.	X	RQ HAZARDOUS WASTE SOLID, NOS (LEAD) CLASS 9 NA3077 PG III	X02	DM	X1500	P	D008
c.	X	RQ HAZARDOUS WASTE SOLID, NOS (LEAD) CLASS 9 NA3077 PG III	X06	DM	X6000	P	D008
d.							

J. Additional Descriptions for Materials Listed Above
APPROVAL #1062372
RQ = 10#
11a. 55GA. DRUMS
11b. 85GA DRUMS
11c. 110GA DRUMS

K. Handling Codes for Wastes Listed Above
a/ / b/ / c/ / d/ /

15. Special Handling Instructions and Additional Information ERG 171
EMERGENCY CONTACT & PHONE # CHRIS MOTTA (201) 236-2233

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. TO THE BEST OF MY KNOWLEDGE AND BELIEF.

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Printed/Typed Name: ON BEHALF OF FORD MOTOR CO: CHRISTOPHER J. MOTTA
Signature: [signature]
Date (Month Day Year): 02 02 98

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: MARK GALVIN
Signature: [signature]
Date (Month Day Year): 02 02 98

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: JAMES M. COMS
Signature: [signature]
Date (Month Day Year): 020598

GENERATOR / TRANSPORTER / FACILITY

ALL [redacted] MUST [redacted] REPORTED [redacted] THE MI[redacted] POLL[redacted] EMERG[redacted] ALERT[redacted] SYSTEM [redacted] MICHIGAN [redacted] 800-292-[redacted] IN OUT[redacted] STATE [redacted] 73-766[redacted] THE N[redacted] AL RE[redacted]
CENTER AT 1-800-424-8802 24 HOURS PER DAY.

UNIVERSAL EQ CERTIFICATION (11/97)

LAND DISPOSAL RESTRICTION FORM
SUBPART CC WASTE DETERMINATION CERTIFICATION AND SURCHARGE EXEMPTION NOTIFICATION

Michigan Disposal Waste Treatment Plant 49350 N. I-94 Service Dr. Belleville, MI 48111 Ph: 800-592-5489 Fx:800-592-5329
Wayne Disposal, Inc. 49350 N. I-94 Service Dr. Belleville, MI 48111 Ph: 800-592-5489 Fx:800-592-5329
Michigan Recovery Systems, Inc. 36345 Van Born Rd. Romulus, MI 48174 Ph: 800-521-0998 Fx:313-326-5670

Please Check One: ☒ MDWTP ☐ WDI ☐ MRSI

Generator Name FORD MOTOR CO. (FMC) MAHWAH ASSEMBLY Manifest Doc. No./Approval #/T# MI 4433748

Generator Address PARKLINE TOWERS EAST. SUITE 1400, ONE PARKLINE BLVD. DEARBORN MI 48120

Generator USEPA ID No. NJD002405801 State Manifest No. _____

INSTRUCTIONS

- In Column 1 identify all USEPA hazardous waste codes that apply to this waste approval/shipment in the spaces provided below.
- In Column 2, identify the appropriate treatability group for each waste code: Non-Wastewater (NWW) or Wastewater (WW).
- In Column 3, in accordance with Subpart CC identify whether or not your waste contains >500 ppmw VOC (YES or NO), as identified as CCVOC in Attachment 1.
- In Column 4, enter the appropriate Subcategory, (See 268.40), if applicable, and also enter "Debris" if the waste is debris that will be treated using one of the alternative treatment technologies provided by 268.45.
- In Column 5, reference the appropriate paragraph(s) from Page 2 and 3 of this form. If your waste is surcharge exempt, please fill out paragraph N (On page 3).
- To expedite your approval, specify the concentration level of each constituent identified in your waste stream on Attachment 1. When shipping your waste, transfer the appropriate Reference Number(s) from Table 1 to Column 6 below, concentration data does not need to be entered in Attachment 1. [If the waste is a California List Waste, complete the boxes below appropriately and identify (in Column 6) the Reference Number(s) of the appropriate California List constituent(s) found in Attachment 1, Table 3.]

MAIN LINE ITEM #	1. HAZARDOUS WASTE CODE(S)	2. NWW or WW	3. SUBPART CC YES/NO	4. SUBCATEGORY	5. HOW MUST THE WASTE BE MANAGED?	6. REFERENCE NUMBER(S)
11.A	D008	NWW	YES	NOT APPLICABLE	A	NOT APPLICABLE
11.B						
11.C						
11.D						

I certify that this waste contains < 1.3% MVOC constituents for hazardous and non-hazardous waste as specified in the MVOC list provided in this form. I hereby certify that all information submitted on this and all associated documents is complete and accurate to the best of my knowledge and information.

Generator Signature _____ Title 4/30/98
ON BEHALF OF FORD MOTOR COMPANY

Printed Name CHRISTOPHER J. MOTTA Date 4/30/98

DNR WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Part 111 Part 121 of Act 451, 1994, as amend

Failure to file may subject you to criminal and/or civil penalties, under Sections 324.11151 or 324.12115 MC

Form Approved. OMB No. 2050-0039 Expires 9

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N J D 0 0 2 4 0 5 8 0 1 | Manifest Document No. 3 3 7 4 3 | 2. Page 1 of 1 | Information in the shaded are is not required by Fede law.

3. Generator's Name and Mailing Address
FORD MOTOR COMPANY/FORMER MAHWAH, NJ ASSEMBLY PLANT
c/o EQO PARKLANE TOWERS EAST, SUITE 1400, ONE PARKLANE BLVD. DEARBORN, MI 48120

A. State Manifest Document Number MI 4433748

B. State Generator's ID PETERS MINE RD. RINGWOOD, N.

4. Generator's Phone (313) 322-4646

5. Transporter 1 Company Name JOHN KROMMER INC.

6. US EPA ID Number PAD008781972

C. State Transporter's ID NJDEP08610

D. Transporter's Phone 610-385-505

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address THE ENVIRONMENTAL QUALITY CO. - MDI
49350 NORTH I-94 SERVICE DRIVE
BELLVILLE, MI 48111

10. US EPA ID Number M I D 0 0 0 7 2 4 8 3 1

G. State Facility's ID

H. Facility's Phone 800 592-5329

	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER). HM		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	RQ HAZARDOUS WASTE SOLID, N.O.S. (LEAD) CLASS 9 NA3077 PG III	00	DT	00022	T	D008
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above
APPROVAL #1062372T
RQ= 10#

K. Handling Codes for Wastes Listed Above
a/ /
b/ /
c/ /
d/ /

15. Special Handling Instructions and Additional Information NJ Decal #s 80481 - 80313
EMERGENCY CONTACT & PHONE # CHRIS MOTTA (201) 236-2233 ERG# 171 Plate #AA-91706 PA

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. TO THE BEST OF MY KNOWLEDGE AND BELIEF

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GENERATOR — Printed/Typed Name: ON BEHALF OF FORD MOTOR CO: CHRISTOPHER J. MOTTA — Signature — Date: Month 01 Day 29 Ye 91

TRANSPORTER — 17. Transporter 1 Acknowledgement of Receipt of Materials — Printed/Typed Name: EDWARD B JENKINS — Signature — Date: Month 01 Day 29 Ye 91

18. Transporter 2 Acknowledgement of Receipt of Materials — Printed/Typed Name — Signature — Date: Month Day Ye

FACILITY — 19. Discrepancy Indication Space
ADDED PER DEANN STROMER AT ARCADIS

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. — Printed/Typed Name — Signature — Date: Month Day Ye 1 26 9 9

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM. IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

TARP & TRIM ALL LOADS B-4
SCALING OUT---15 MPH IN
QUARRY---READ TICKET B-4 SIGN IT! **SAFETY FIRST**

TICKET NO. 801036

MT. HOPE ROCK PRODUCTS

CUSTOMER COPY

MAIN OFFICE:
625 MT. HOPE ROAD
WHARTON, N.J. 07885
(973) 366-7741

SCALEHOUSE:
(973) 366-5962

AN EQUAL OPPORTUNITY EMPLOYER

CRUSHED STONE ● BITUMINOUS CONCRETE ● ASPHALT

DRIVER SIGNATURE

WE ARE NOT RESPONSIBLE FOR ANY DAMAGES OF PROPERTY CAUSED BY OUR EQUIPMENT OR ANY HIRED EQUIPMENT WHEN DELIVERY IS ORDERED OFF PUBLIC ROADS.

CUSTOMER SIGNATURE

SOLD TO: INTERGRATED TECHNICAL SVC

SHIP TO: I.T.S./PICKUP

P.O.# 2000-1474

ACCOUNT NO.	JOB NO.	TRUCK NO.	DELV. CODE	TRUCKER NO.	ZONE	TICKET NO.
006595	0000	0031	Pickup	00402	000	0801036

PRODUCT NO.	UNITS	PRODUCT DESCRIPTION
0384	TN	CERTIFIED CLEAN FILL PILE 747

GROSS: 38.52 TN	77040 lb	34945 kg	34.95 Mg
TARE: 17.30 TN	34600 lb	15695 kg	15.70 Mg
NET: 21.22 TN	42440 lb	19251 kg	19.25 Mg

LOAD #: 2 TOTAL: 43.860 TN 39.790 Mg
DATE: 04/28/98 TIME: 12:20 PILE #: 00

LEAVE JOB SITE

ARRIVE JOB SITE

TOTAL MINUTES

WAITING TIME

MT. HOPE QUARRY - PRIVATE WEIGHMASTER

RONNIE P. MATTIA DEPUTY.

TARP & TRIM ALL LOADS B-4
SCALING OUT--15 MPH IN
QUARRY--READ TICKET B-4 !!
SIGN IT! **SAFETY FIRST**

TICKET NO. 800910

MT. HOPE ROCK PRODUCTS

CUSTOMER COPY
MAIN OFFICE:
625 MT. HOPE ROAD
WHARTON, N.J. 07885
(973) 366-7741

SCALEHOUSE:
(973) 366-5962

AN EQUAL OPPORTUNITY EMPLOYER

CRUSHED STONE ● BITUMINOUS CONCRETE ● ASPHALT

DRIVER SIGNATURE

CUSTOMER SIGNATURE

WE ARE NOT RESPONSIBLE FOR ANY DAMAGES OF PROPERTY CAUSED BY OUR EQUIPMENT OR ANY HIRED EQUIPMENT WHEN DELIVERY IS ORDERED OFF PUBLIC ROADS.

SOLD TO: INTERGRATED TECHNICAL SVC SHIP TO: I.T.S./PICKUP

P.O.# 2000-1474

ACCOUNT NO.	JOB NO.	TRUCK NO.	DELV. CODE	TRUCKER NO.	ZONE	TICKET NO.
006595	0000	0031	Pickup	00402	000	0800910

PRODUCT NO.	UNITS	PRODUCT DESCRIPTION
0384	TN	CERTIFIED CLEAN FILL PILE 747

GROSS:	39.94 TN	79880 lb	36234 kg	36.23 Mg
TARE:	17.30 TN	34600 lb	15695 kg	15.70 Mg
NET:	22.64 TN	45280 lb	20539 kg	20.54 Mg

LOAD #: 1 TOTAL: 22.640 TN 20.539 Mg
DATE: 04/28/98 TIME: 10:18 PILE #: 00

LEAVE JOB SITE

ARRIVE JOB SITE

TOTAL MINUTES

WAITING TIME

MT. HOPE QUARRY - PRIVATE WEIGHMASTER

RONNIE P. MATTIA DEPUTY.